



Sybase[®]
PowerDesigner[®]
Business Process Model

User's Guide

Version 9.5.1
38088-01-0951-01
Last modified: December 2002

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About This Book

Subject	<p>This book describes the PowerDesigner Business Process Model environment. It shows you how to do the following:</p> <ul style="list-style-type: none">◆ Build a Business Process Model (BPM)◆ Create and use business rules and other model objects◆ Verify the model, merge and compare models◆ Open V6 PAM models◆ Generate a Business Process Model from the BPM
Audience	<p>This book is for anyone who will be designing or building a BPM with PowerDesigner. It requires an understanding of object modeling. Some experience with programming languages might also be helpful but not required. For more information, see the Bibliography section at the end of this chapter.</p>
Documentation primer	<p>The PowerDesigner modeling environment supports several types of models:</p> <ul style="list-style-type: none">◆ Conceptual Data Model (CDM) to model the overall logical structure of a data application, independent from any software or data storage structure considerations◆ Physical Data Model (PDM) to model the overall physical structure of a database, taking into account DBMS software or data storage structure considerations◆ Object Oriented Model (OOM) to model a software system using an object-oriented approach for Java or other object languages◆ Business Process Model (BPM) to model the means by which one or more processes are accomplished in operating business practices◆ Free Model (FEM) to create any kind of chart diagram, in a context-free environment

The Business Process Model also allows you to generate and reverse ebXML Business Process Specification Schema (BPSS) XML file. These features are not documented in this book but in the *ebXML Technical Document*.

This book only explains how to use the BPM. For information on other models or aspects of PowerDesigner, consult the following books:

General Features Guide To get familiar with the PowerDesigner interface before learning how to use any of the models.

Conceptual Data Model Getting Started To learn the basics of the CDM.

Conceptual Data Model User's Guide To work with the CDM.

Physical Data Model Getting Started To learn the basics of the PDM.

Physical Data Model User's Guide To work with the PDM.

Object Oriented Model Getting Started To learn the basics of the OOM.

Object Oriented Model User's Guide To work with the OOM.

Business Process Model Getting Started To learn the basics of the BPM.

Reports User's Guide To create reports for any or all models.

Repository Getting Started To learn the basics of the Repository.

Repository User's Guide To work in a multi-user environment using a central repository.

Typographic conventions

PowerDesigner documentation uses specific typefaces to help you readily identify specific items:

- ◆ monospace text (normal and **bold**)
Used for: Code samples, commands, compiled functions and files, references to variables.
Example: `declare user_defined...`, the **BeforeInsertTrigger** template.
- ◆ UPPER CASE
Object codes, reversed objects, file names + extension.
Example: The AUTHOR table appears in the Browser. Open the file OOMAFTER.OOM.

- ◆ **bold text**
Any new term.
Example: A **shortcut** has a target object.
- ◆ **SMALL CAPS**
Any key name.
Example: Press the **ENTER** key.

Bibliography

The Workflow reference Model - <http://www.wfmc.org>.

Business Process Model Language Specification - <http://www.bpmi.org/>.

Document: Business Process Specification Schema - <http://www.ebxml.org/>.

Alan Kotok, David R. Webber, David RR Webber - ebXML: The New Global Standard for Doing Business on the Internet - New Riders Publishing, 2001.

CHAPTER 1

Business Process Model Basics

About this chapter This chapter presents the PowerDesigner Business Process Model. It provides you with an introduction to the basic notions of business process modeling.

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Functional overview

PowerDesigner Business Process Model is a powerful and easy to use design tool for identifying the business needs from a business process or functional standpoint.

The business process model describes the various internal tasks and internal processes of a business and how the partners interact with these tasks and processes.

With this product, you can:

- ◆ Build a **Business Process Model** (BPM)
- ◆ Open a V6 Process Analyst Model (PAM)
- ◆ Customize the BPM to suit physical and performance considerations
- ◆ Generate and reverse ebXML Business Process Specification Schema (BPSS) XML files
- ◆ Generate a Business Process Model from the BPM
- ◆ Create and print reports

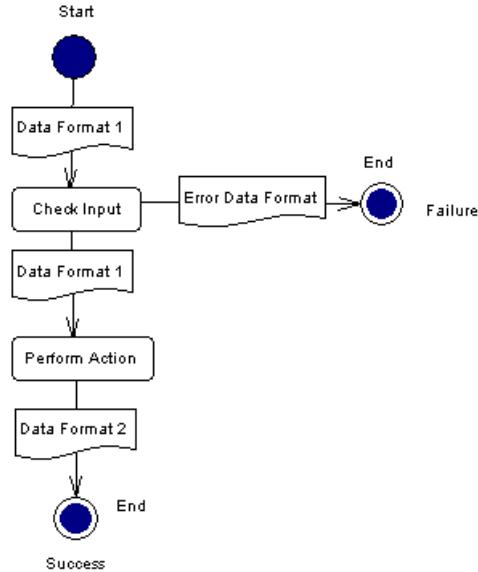
☞ For more information on ebXML generation and reverse, see sections How to generate an ebXML BPSS file and How to reverse engineering an ebXML BPSS file in the *ebXML Technical Document*.

What is a BPM?

A **Business Process Model** (BPM) is a conceptual model which provides a close description of the business logic and rules from a business partner's point of view. A BPM uses a diagram that shows interactions between processes, flows, messages and collaboration protocols from one or several start points to several potential end points.

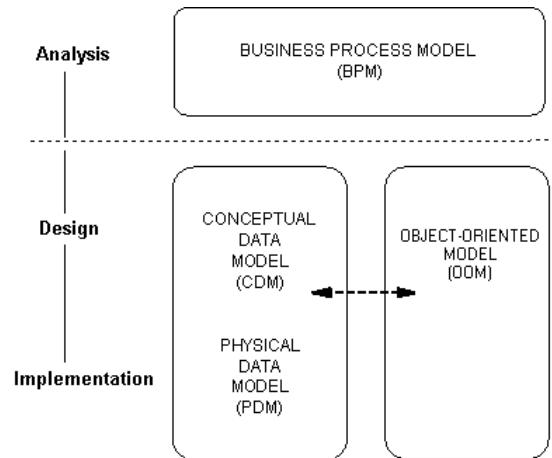
A BPM can be compared to a market place where data or services are exchanged. It usually arises from a compelling business need or opportunity.

Example



The Business Process model is a simplified UML activity diagram with Business Process extensions. It does not include any implementation details. It can be readily used as an input document to do object-oriented analysis. At a conceptual level, it is particularly suitable for analyzing, designing or documenting Business-to-Business exchanges (B2B).

This is how the BPM is integrated into the PowerDesigner global software solution:



BPM roles

You use a BPM to:

- ◆ Describe the behavior and requirements of a system
- ◆ Represent the conceptual organization of objects in a graphic format
- ◆ Open PAM models
- ◆ Generate a BPM
- ◆ Design or document ebXML BPSS

☞ For more information on how to open PAM models, see section [Opening ProcessAnalyst models](#) in chapter [Working with Business Process Models](#).

☞ For more information on how to generate a BPM, see chapter [Generating from a Business Process Model](#).

☞ For more information on ebXML BPSS design, see section [Designing ebXML BPSS in a Business Process Model](#) in the *ebXML Technical Document*.

Objects in a BPM

The BPM includes the following objects:

Object	Tool	Description
Package		Used to organize elements into groups. Not available for sub-process diagrams as you cannot create packages within sub-process diagrams
Organization unit		Element that hosts or implements processes and resources. It can be a company, a system, a service, an organization, a user or a role
Message format	—	Definition of data exchanged between processes
Process		Invocation of an action
Composite process	—	Complex process decomposed to be further detailed
Start		Starting point of the processes described in the process diagram
End		Termination point of the processes described in the process diagram
Decision		Decision the flow has to take when several flow paths are possible
Synchronization		Enables synchronization of flows between two or more concurrent actions
Flow		Path the flow transits on to join processes, starts, ends or synchronizations
Resource		Storage unit of abstract data circulating within the model, which is accessed by a process to perform actions
Resource flow		Access of a process to a resource
Data	—	Defines the type of information exchanged between business processes

Defining a BPM

You can create a new BPM, or open an existing one. You can set options to define how your model is created or modified, and the type of information that it displays.

Creating a BPM

There are several ways to create a BPM:

- ◆ Create a new BPM
- ◆ Open a V6 Process Analyst Model (.PAM)
- ◆ Generate a new BPM
- ◆ Reverse an ebXML BPSS XML file

☞ For more information on reversing an ebXML BPSS XML file, see section How to reverse engineering an ebXML BPSS file in the *ebXML Technical Document*.

❖ **To create a new BPM:**

1 Select File→New to display a selection box listing the available PowerDesigner modules.

2 Select Business Process Model and click OK.

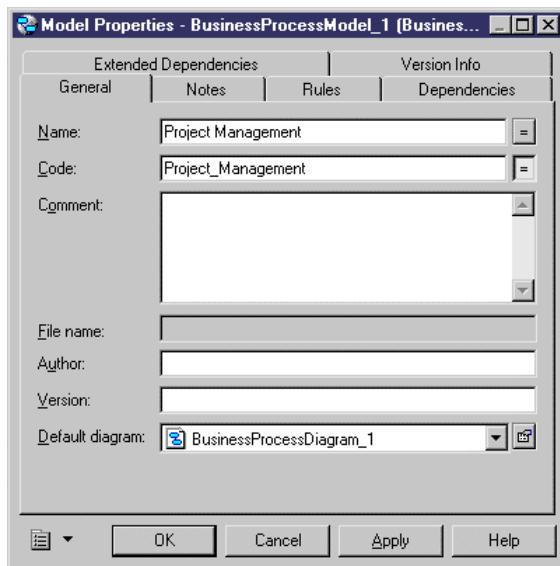
A new BPM opens in the current Workspace. An empty diagram window appears containing a palette of design tools. The new BPM node appears under the Workspace node in the Browser.

3 Select Model→Model Properties.

or
Right-click any empty space in the diagram window and select Properties from the contextual menu.

The model property sheet appears.

4 Type a model name and model code.



5 Click OK.

Demo example

An example of a BPM is available in the Examples directory.

Opening an existing BPM

A Business Process Model has the file extension .BPM.

❖ **To open an existing BPM:**

- 1 Select File→Open to display a standard open file dialog box.
- 2 Select a file with the .BPM extension.
- 3 Click Open.

The model appears in the Browser and a diagram opens in the diagram window.

Detaching a BPM from the Workspace

You can detach a BPM from a workspace. When a BPM is detached from a workspace, its node is removed from the Browser and it is no longer defined in the workspace, but the file is not deleted from your operating environment.

❖ To detach a BPM from the Workspace:

- 1 Right-click the BPM node in the Browser and select Detach From Workspace from the contextual menu.
A confirmation box asks if you want to save the BPM.
- 2 Click Yes if you want to save modifications to the BPM.
Select or browse to a directory.
Type a name for the file and click the Save button.
or
Click No if you do not want to save modifications to the file.
The BPM is removed from the Workspace.

Saving and closing a BPM

You save a BPM by selecting File→Save.

You close a BPM by selecting File→Close.

Defining BPM options

You can set the following BPM options:

- ◆ All Objects
- ◆ Default Message Format

All objects

From the All Objects groupbox, you can define the case sensitivity of names and codes in the current model. Unlike other model options, you can modify the name and code case sensitivity during the design process. However, if you do so, make sure you run the check model feature to verify if the model does not contain any duplicate object.

Default Message Format Message Format is a property for both flows and resource flows that gives information on the type of data exchanged between objects. Undefined is the default value when you create a flow, but you can modify it to set it to None.

Option	Result
None	When selected, it indicates that you do not want any default message format for your flows, as the event is of minor importance. You usually use this option when you do not want to specify data flows in your BPM
Undefined	When selected, it indicates that all your message formats will be defined later

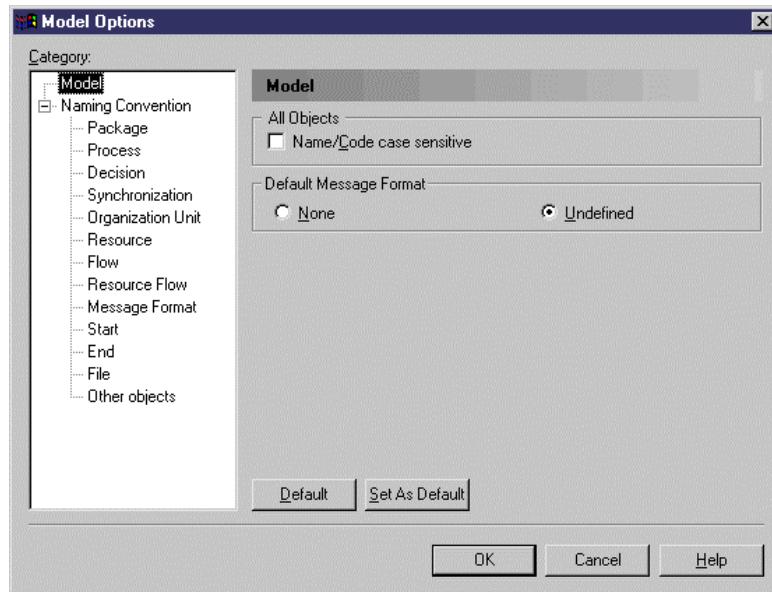
You can modify any of these options individually directly from the property sheet of the flow or resource flow.

☞ For more information on the flow or resource flow properties, see corresponding sections in chapter Building a Business Process Model.

❖ **To define BPM options:**

- 1 Select Tools→Model Options.
or
Right-click any empty space in the diagram and select Model Options from the contextual menu.

The Model Options dialog box opens to the Model page.



- 2 Select model options in the different groupboxes.
- 3 Click OK.

Modifying BPM properties

The Model property sheet displays the definition of the current model.

A BPM has the following model properties:

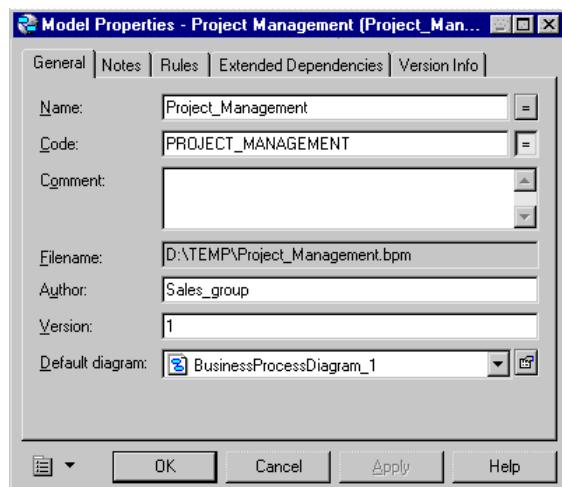
Property	Description	Length
Name	Name for the model	254
Code	Code for the model	254
Comment	Descriptive label for the model	—
Filename	Location of the model file. This box is empty if the model has never been saved	—

Property	Description	Length
Author	Author of the model. You can insert a name, a space, or nothing. If you insert a space, the Author field in the title box remains empty. If you intentionally leave the box empty, the Author field in the title box displays the user name from the Version Info page of the model property sheet	254
Version	Version of the model. You can use this box to display the repository version or a user defined version of the model. This parameter is defined in the display preferences of the Title node	—
Default diagram	Diagram displayed by default when you open the model	—

❖ **To modify the properties of a BPM:**

- 1 Select Model→Model Properties.
or
Right click the diagram background and select Properties from the contextual menu.

The model property sheet appears.



- 2 Type changes to model properties.
- 3 Click OK.

Extended model definitions in a BPM

An extended model definition allows you to expand object definitions and complement the generation targets and commands . Extended model definitions are created and saved in files with the XEM extension. You can create or attach one or several extended model definitions to a model.

Extended model definitions may contain:

- ◆ Extended attributes for applicable objects in order to further define their properties
- ◆ Stereotypes to define extended dependencies established between model objects
 - ☞ For more information on extended dependencies, see Extended dependencies in a BPM.
- ◆ Generation targets and commands to complement the generation of an object model, or to perform an extended generation
 - ☞ For more information on extended model definitions, see chapter Extended Model Definitions Reference Guide in the *Advanced User Documentation*.

Extended dependencies in a BPM

Extended dependencies are links between BPM objects. These links help to make object relationships clearer but are not interpreted and checked by PowerDesigner as they are meant to be used for documentation purposes only.

You can complement these links by applying stereotypes. Stereotypes are used to define extended dependencies between objects in the BPM.

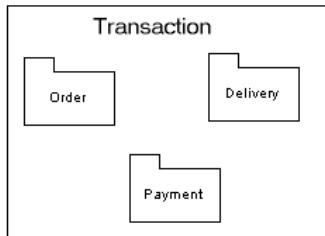
You can type stereotypes directly in the Stereotype column of the object property sheet or select a value from the dropdown listbox if you have previously defined stereotypes in an embedded or imported extended model definition (.XEM).

☞ For more information on extended dependencies, see section Using Extended Dependencies in the *General Features Guide*.

Defining packages in a BPM

A **package** is a general purpose mechanism for organizing elements into groups. It contains model objects.

When you work with large models, you can split them into smaller subdivisions to avoid manipulating the entire set of data of the model. Packages can be useful to assign portions of a model, representing different tasks and subject areas to different development teams.



Package hierarchy

You can create several packages at the same hierarchical level within a model or decompose a package into other packages and continue this process without limitation in decomposition depth. Each package appears with a default diagram window. At each level of decomposition you can create several diagrams.

☞ For more information on packages, see section *Defining a package* in chapter *Managing models* in the *General Features Guide*.

Package in a composite process

You cannot create a package in a composite process since this one behaves like a package.

Package properties in a BPM

Packages have properties displayed on property sheets. All packages share the following common properties:

Property	Description	Length
Name	Name that clearly identifies the package	254
Code	Codes are references for packages	254
Comment	Optional label that describes a package and provides additional information	—

Property	Description	Length
Stereotype	Sub-classification derived from an existing package	254
Use parent namespace	Defines the package as being the area in which the name of an object must be unique in order to be used	—
Default diagram	Diagram displayed by default when opening the package	—

Stereotype The Stereotype dropdown listbox is empty by default. However, it is possible to define stereotypes of your own using the extended model definitions.

☞ For more information on extended model definitions, see the *General Features Guide*.

Creating a package in a BPM

A package always belongs to a model. You create a package like any other model objects.

The name of each package must be unique in the model.

There are several ways to create a package:

- ◆ From a diagram
- ◆ From the Browser
- ◆ From the list of packages

At creation, a package has a default name including a number, this number is assigned in the order of creation.

☞ For more information on the different ways to create a package, see section Creating an object in chapter Managing Objects in the *General Features Guide*.

Modifying the package display preference in a BPM

You can modify the following display preference for a package using the Tools→Display Preferences command:

Preference	Description
Show stereotype	Displays the stereotype of the package

CHAPTER 2

Using Business Rules in a BPM

About this chapter This chapter describes how business rules help you model information.

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What is a business rule in a BPM?

A business rule is a written statement specifying what the information system must do or how it must be structured to support business needs.

A business rule is a rule that your business follows. A business rule could be a government-imposed law, a customer requirement, or an internal guideline.

Starts as an observation

Business rules often start as simple observations, for example "customers call toll-free numbers to place orders." During the design process they develop into more detailed expressions, for example what information a customer supplies when placing an order or how much a customer can spend based on a credit limit.

Complements graphics

Business rules complement model graphics with information that is not easily represented graphically. For example, some rules specify physical concerns in the form of formulas and validation rules. These technical expressions do not have a graphical representation.

Defining business rules in a BPM

You can define a business rule which can be attached to an object in the BPM.

Business rule properties in a BPM

A business rule definition includes the following properties:

Property	Description	Maximum length
Name	Name for the rule	254
Code	Reference name for the rule	254
Comment	Descriptive label for the rule	—
Type	It can be a definition, fact, formula, requirement, validation, or constraint	—

A business rule definition also includes the following properties, each with their respective page:

Property	Description
Expression	Presence of associated expression
Notes	Presence of associated notes

Types of business rules in a BPM

You can define several different types of business rules:

Rule type	Describes	Example
Definition	Object properties in the information system	A customer is a person identified by a name and an address
Fact	Certainty, existence in the information system	A client may place one or more orders
Formula	Calculation used in the information system	The total order is the sum of all the order line costs
Requirement	Functional specification in the information system	The model is designed so that total losses do not exceed 10% of total sales
Validation	Constraint on a value in the information system	The sum of all orders for a client must not be greater than that client's allowance
Constraint	Additional check constraint on a value. Constraint business rules are used in the PDM, they are generated in the database	The start date should be inferior to the end date of a project

☞ For more information on constraint, see section *Using constraint business rules in a PDM* in chapter *Using Business Rules in a PDM* in the *Physical Data Model User's Guide*.

Creating a business rule in a BPM

Before you create business rules, formulate your rules by asking yourself the following questions:

- ◆ What business problems do I want to address?
- ◆ Are there any procedures that my system must respect?
- ◆ Do any specifications dictate the scope of my project?
- ◆ Do any constraints limit my options?
- ◆ How do I describe each of these procedures, specifications, and constraints?
- ◆ How do I classify these descriptions: as definitions, facts, formulas, or validation rules?

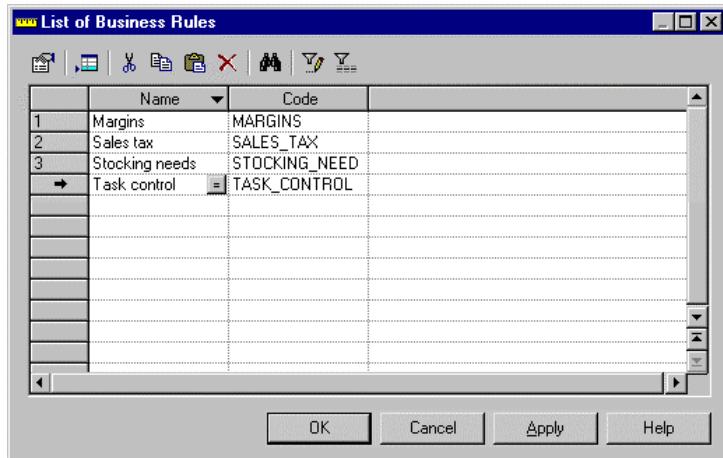
❖ To create a business rule in a BPM:

- 1 Select Model→Business Rules to display the List of Business Rules showing any business rules currently defined for the model.
- 2 Click a blank line in the list.

or

Click the Add a Row tool.

An arrow appears at the beginning of the line.
- 3 Type a name and a code for the business rule.



- 4 Click Apply.
The creation of the new business rule is committed.
- 5 Click the new business rule line.
An arrow appears at the beginning of the line.
- 6 Click the Properties tool.
or
Double click the arrow at the beginning of the line.
The property sheet for the new business rule appears.
- 7 Click the General tab and select a business rule type from the Type dropdown listbox.
- 8 Click OK in each of the dialog boxes.

Applying business rules to BPM objects

From the list of business rules, you can apply a business rule to existing BPM objects. You can also apply a business rule to objects from their respective property sheets or lists.

Applying a business rule to a BPM object

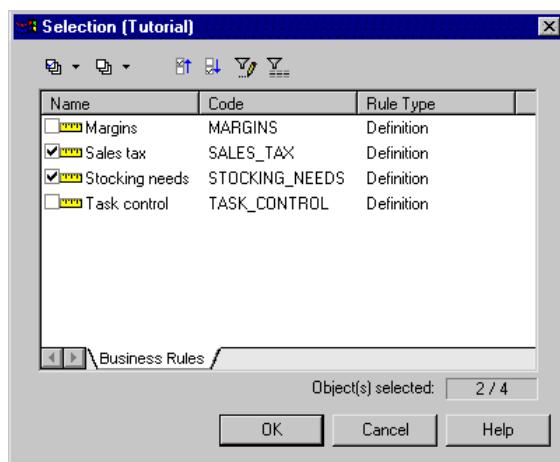
You can apply a business rule to a BPM object from its property sheet.

❖ **To apply a business rule to a BPM object:**

- 1 Double-click an object in the model to display the object property sheet.
- 2 Click the Rules tab to display the Rules page.
- 3 Click the Add Objects tool.

The Selection window appears. It contains a list of all the business rules of the model, except the rules that already belong to the object.

- 4 Select the business rules you want to add to the object.



- 5 Click OK.

The business rules are added to the object and appear in the list of business rules for the object.

- 6 Click OK.

Attaching an expression to a BPM business rule

A business rule typically starts out as a description. As you develop your model and analyze your business problem, you can complete a rule by adding a technical expression.

Each business rule can include two types of expression:

- ◆ Server that can be generated to a database
- ◆ Client that is used mainly for documentation purposes

Expressions are used essentially in a CDM or a PDM.

☞ For more information on expressions, see chapter *Using Business Rules* in the *Conceptual Data Model User's Guide and Physical Data Model User's Guide*.

CHAPTER 3

Building a Business Process Model

About this chapter This chapter describes how to build a Business Process Model (BPM). It explains the role of each object in a BPM diagram and how to create and modify them.

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Defining a business process diagram

A **business process diagram** shows interactions between business processes. It focuses on flows that vehicle data among processes.

It can be created in a model, or a package or within a composite process.

Business process diagrams vs. sub-process diagrams

There is a difference between the top business process diagram created within a model or a package, and the sub-process diagram created within a composite process.

Business process diagrams

You can create several business process diagrams within a package or a model. Each of those diagrams is independent and designs a business process. A business process diagram defines an isolated context in which the integrity of elements can be checked.

In a business process diagram, you can:

- ◆ Create packages
- ◆ Convert the business process diagram to a package
 - ☞ For more information on converting a diagram to a package, see the corresponding section in the *General Features Guide*.
- ◆ Convert the business process diagram to a composite process
 - ☞ For more information on converting a business process diagram to a composite process, see section *Converting a business process diagram to a composite process*.

Sub-process diagrams

A sub-process diagram designs a process decomposition. It details the implementation of a parent process, called **composite process**. It describes the context of a complex process. All integrity checks are performed on all elements defined in the composite process.

In a sub-process diagram, it is **not** possible to create packages. You can only use shortcuts of packages.

You can create several sub-process diagrams within a composite process but it is not advised though to decompose a process into too many sub-process diagrams.

☞ For more information on sub-process diagrams, see section *Converting a business process diagram to a composite process*.

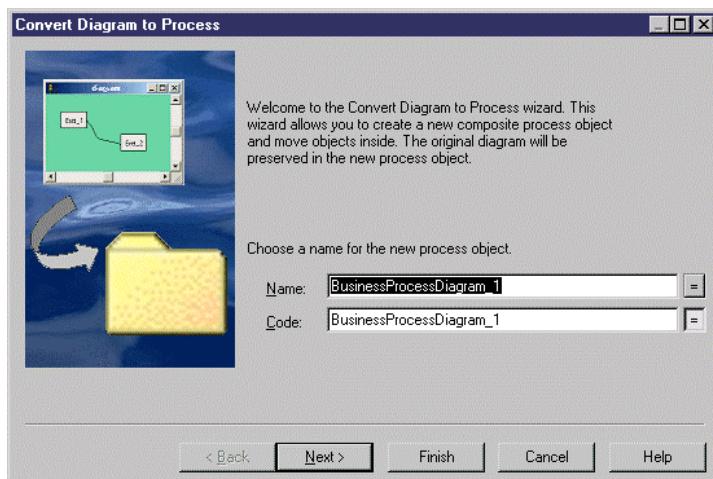
Converting a business process diagram to a composite process

PowerDesigner lets you convert a diagram to a composite process using the Convert Diagram to Process Wizard from the Tools menu. When you convert a business process diagram to a composite process, you create sub-business process diagrams within a composite process. You do so, when you want to describe the context of a complex process. The diagram must contain objects to proceed to the conversion in the wizard.

❖ To convert a business process diagram to a composite process:

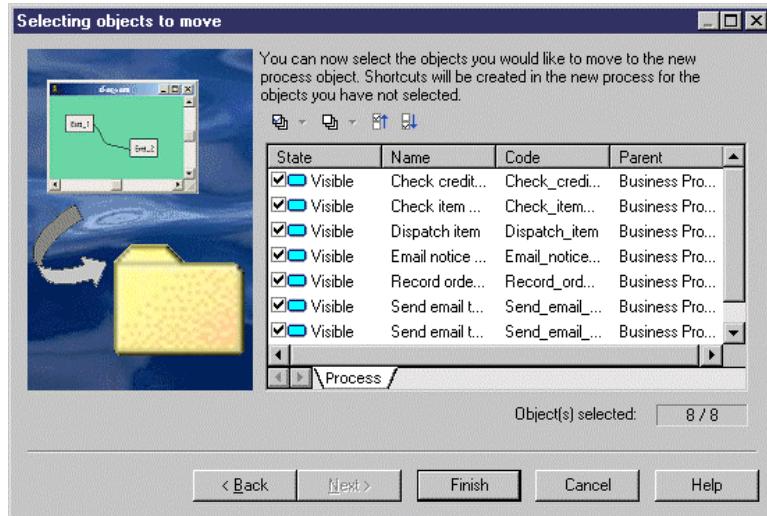
- 1 Right-click the diagram node in the Browser and select Convert to Composite Process from the contextual menu.
or
Right-click the diagram background window and select Diagram→Convert to Composite Process from the contextual menu.
or
Select Tools→Convert to Composite Process.

The Convert Diagram to Process page appears.



- 2 Type a name and a code for the composite process.
- 3 Click Next.

The Selecting objects to move page appears. It displays only relevant tabbed pages. By default, all objects are selected.



4 Click Finish if you want all the selected objects to be moved into the composite process.

or

Deselect the objects you do not want to be moved into the composite Process and click Finish.

☞ For more information on how to select items in a selection list, see section Adding an item from a selection list in chapter Using the PowerDesigner interface in the *General features Guide*.

The selected objects are moved into the composite process. From the Browser, you can see that sub-objects appear directly under the composite process node at the same level as the sub-process diagram.

Defining starts in a BPM

A **start** is a starting point of the whole process represented in the business process diagram. It represents an external entry point between a process and the outside.

You can create several starts within a package or a model since you can use several business process diagrams in the same model or package

However, you cannot create shortcuts for a start.

Start properties in a BPM

You can double-click any start symbol in a diagram to display its properties:

Property	Description	Maximum length
Name	Name of the start	254
Code	Reference name of the start	254
Comment	Descriptive comment for the start	—
Stereotype	Sub-classification derived from an existing start	254

Creating a start in a BPM

There are several ways to create a start:

- ◆ From a diagram
- ◆ From the Browser
- ◆ From the list of starts

At creation, a start has a default name including a number, this number is assigned in the order of creation.

☞ For more information on the different ways to create a start, see section Creating an object in chapter Managing Objects in the *General Features Guide*.

❖ To create a start from a diagram:

- 1 Click the Start tool.

- 2 Click anywhere in the diagram.

The following symbol appears at the click position:



- 3 Click the Pointer tool.

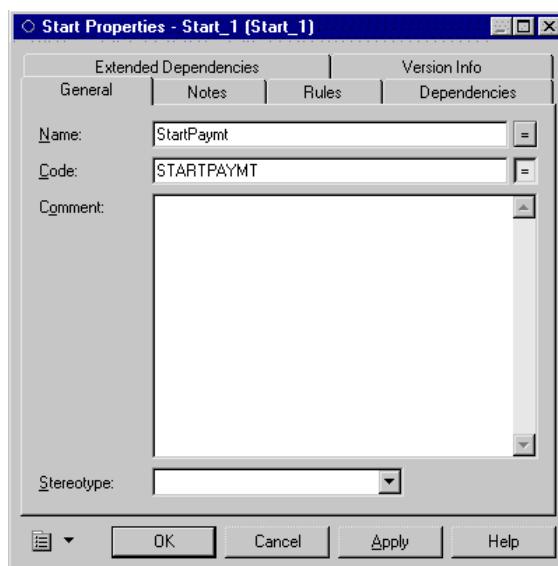
or

Click the right mouse button.

You release the Start tool.

- 4 Double-click the start symbol to display the start property sheet.

- 5 Type a name and a code.



- 6 Click OK.

Modifying start properties in a BPM

You can modify the start properties using the following methods:

- ◆ From the start property sheet
- ◆ From the list of starts

☞ For more information on the different ways to modify the start properties, see section *Modifying object properties* in chapter *Managing Objects* in the *General Features Guide*.

Modifying the start display preferences in a BPM

You can modify the following display preferences for a start using the Tools→Display Preferences command:

Preference	Description
Show name	Displays the name of the start
Show stereotype	Displays the stereotype of the start

When you define display preferences for a start, you automatically define them for an end also.

☞ For more information on defining display preferences for an end, see section [Modifying the end display preferences in a BPM](#).

Defining processes in a BPM

A **process** can be the design of a service (implementation process) or the invocation of a manual or automated action, like "getting money from an incoming order", or "building a software system according to the specifications" for example. When the process gains the control, it performs the action, then, depending on the result of the action, the flow is passed to another process. A process can be viewed as an action to reach a goal.

A process must have one input flow and one output flow at least.

A process can be atomic or composite:

- ◆ An **atomic process** does not contain any sub-processes. It is called process in a BPM
- ◆ A **composite process** uses sub-processes to describe its actions. It is called composite process in a BPM

☞ For more information on composite processes, see section Defining composite processes.

Reusing existing processes

You can use internal and external shortcuts of processes to reference your model.

☞ For more information on shortcuts, see chapter Managing shortcuts in the *General Features Guide*.

You can also use implementation processes that semantically behave as shortcuts, however you can redefine some properties such as name, code, timeout or duration.

☞ For more information on implementation processes, see section Process properties.

Process properties

You can double-click any process symbol in a diagram to display its properties.

Property	Description	Maximum length
Name	Name of the process	254
Code	Reference name of the process	254
Comment	Descriptive comment for the process	—
Stereotype	Extends the semantics of a process derived from existing processes but specific to your needs	254
Organization unit	Displays the organization units defined in the model. You can click the Properties tool beside this box to display the property sheet of the selected organization unit	254
Composite	If selected, implies that the process becomes a composite process	—
Implemented by	Displays the available implementation processes in the model. You can click the Properties tool beside this box to display the property sheet of the selected implementation process	254

Stereotype

You can type stereotypes directly in the Stereotype column of the object property sheet or select a value from the dropdown listbox if you have previously defined stereotypes in an embedded or imported extended model definition (.XEM).

☞ For more information on extended model definitions, see section *Working with extended model definitions* in chapter *Managing Objects* in the *General Features Guide*.

Organization unit

An organization unit is an optional element that allows you to define which organization is responsible for which process. It can represent a company, a system, a service, an organization, a user or a role. The Organization Unit box lists the organization units defined in the model. It is used to specify which organization unit is linked to a process. You can click the Ellipsis tool beside the Organization unit box to create a new organization unit in the List of Organization Units.

☞ For more information on organization units, see section Defining organization units in a BPM.

Composite

The Composite check box allows you to create or delete a composite process. It is not selected by default.

- ♦ If you select the Composite check box, a sub-process diagram is created within the process. This specifies the decomposition of a process. You can then create the same objects as in a business process diagram
- ♦ If you deselect the Composite check box, or select Change to atomic from the contextual menu of a composite process, a confirmation dialog box asks you to confirm the objects deletion. The existing sub-process diagram and all its objects are then deleted. There is no confirmation dialog box if no objects have been defined in the sub-process diagram

Implemented by

The Implemented By box lists available implementation processes of the model. It is used to share the implementation details of an existing process and overload other properties like name, code, timeout or duration. The process selected in the Implemented By box can be considered as a call for the implementation process. The implemented process semantically behaves as a shortcut.

The implemented by process symbol appears with the following icon in the right-hand corner:



Implemented by process vs. implementation process

Type of process	Description
Implemented by process	Process which is implemented by another process
Implementation process	Process that implements another process

You can click the Select Process tool beside the Implemented By box to select an implementation process in another opened diagram.

The Implemented By box is grayed out in a composite process property sheet, as a process cannot define its implementation in a sub-diagram and reference its implementation process at the same time.

A process cannot be implemented by an implemented process.

Drag and Drop + ALT You can directly create an implemented process by pressing the ALT key while dragging the implementation process and dropping it into another package or composite process within the same model or into another model.

A new process is created that bears the same name as its implementation process. You can change the name in the process property sheet and see its implementation process in the Implemented By box.

Action page of the process

An action is a parameter that applies to a process. The Action page defines the nature, the type and the duration of an action that a process executes.

It contains the following parameters:

Parameter	Description
Action type	Specifies the way the action should be executed. It can be a manual, automated or an undefined type
Editor	Details how the action is executed. Example: you can write pseudo code or an information on the program to execute, as well as open, insert and save any text files containing valuable information
Timeout	Zero is the default value. If the value is not set to zero, it means that a timeout exception occurs if the execution of the activation takes more than the specified timeout limit. You can type any alphanumeric value in the Timeout box (Example: 20 seconds)
Duration	Specifies estimated or statistic duration to execute the action. This information is for documentation purposes only; estimate on the global duration is not computed

Opening the Action page

You can open the Action page by right-clicking the process symbol in the diagram, and selecting Action from the contextual menu.

Data page of the process

The Data page displays the way a process uses a data, using a CRUD (Create, Read, Update, Delete) matrix.

☞ For more information on the CRUD matrix, see chapter Using the CRUD Matrix.

In the Data page you can:

- ◆ Add a data to a process from a selection list using the Add a data tool
- ◆ Update the data access (Create, Read, Update, Delete)
- ◆ Delete a data used by a process

☞ For more information on the use of a data by a process, see section Selecting data for a process.

Defining composite processes

A **composite process** is a child process used to describe the actions of a parent process.

There is no limitation on the number of decompositions. Each process can be decomposed into a composite process, except the lowest level processes. Those ones do not need to be further decomposed because they intrinsically contain enough detail, or because they represent an atomic process.

The composite process symbol appears with the following icon in the right-hand corner:



A composite process always contains a default sub-process diagram. You can create several sub-process diagrams within a composite process, but it is not recommended, as when you are in a sub-process diagram it means that you are within the context of a process. Unless you want to design some exception cases like error management for example, it would not be consistent to create too many sub-process diagrams within a composite process.

The composite process behaves like a **specialized** package or container that contains a sub-process diagram, for this reason, it is not possible to create a package in a composite process.

Dragging business process diagram objects into a composite process

You can drag any business process diagram objects from the Browser and drop them into a sub-process diagram. These objects are automatically inserted into the target sub-process diagram.

All sub-processes defined within a composite process share the same namespace as the parent process.

When you work within a composite process, the associated objects appear under the Processes node in the Browser. The Processes node can be expanded to display its children nodes, this allows you to see the process decomposition in a quick and convenient way.

Find in Browser

You can locate any object or any diagram in the Browser tree view from the current diagram window by right-clicking the object symbol or the diagram background, and select Edit→Find in Browser.

Creating a process

There are several ways to create a process:

- ◆ From a diagram
- ◆ From the Browser
- ◆ From the list of processes

At creation, a process has a default name including a number, this number is assigned in the order of creation.

☞ For more information on the different ways to create a process, see section Creating an object in chapter Managing Objects in the *General Features Guide*.

❖ To create a process from a diagram:

- 1 Click the Process tool.
- 2 Click anywhere in the diagram.

The following symbol appears at the click position:

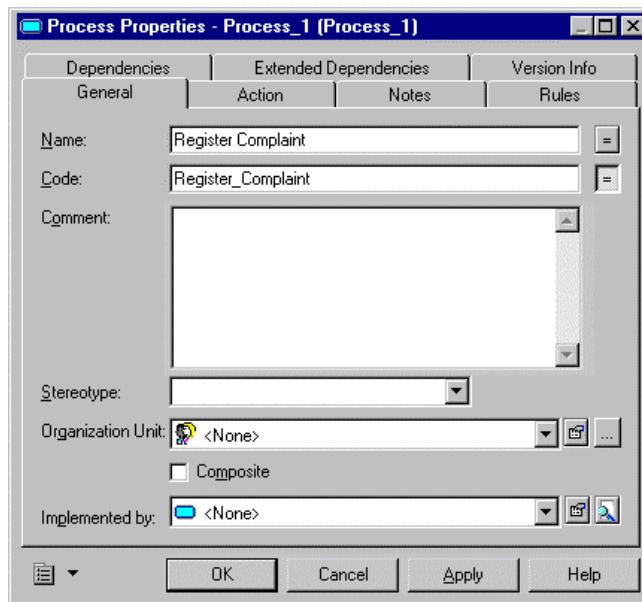


- 3 Click the Pointer tool.
or
Click the right mouse button.

You release the Process tool.

- 4 Double-click the process symbol to display the process property sheet.

5 Type a name and a code.



6 Click OK.

Creating a composite process

You create a composite process from the symbol of the parent process:

- ◆ From a diagram
- ◆ From the contextual menu

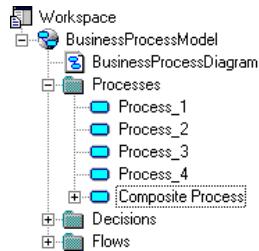
When you create a composite process, a default sub-process diagram is automatically created.

A composite process must always have one start and one end at least.

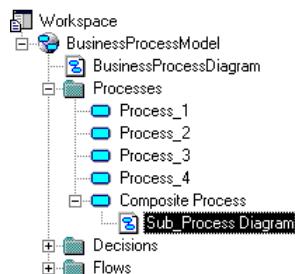
Creating a composite process from a diagram

- ❖ **To create a composite process from the diagram:**
 - ◆ Press CTRL + double-click the parent process symbol to create the composite process.

A default sub-process diagram opens in the diagram window. The composite process node is visible in the Processes category of the Browser marked with a + sign.



If you expand the composite process node, you see that a default sub-process diagram node is automatically created:



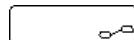
Creating a composite process from the contextual menu

You can create a composite process from the process contextual menu, it is equivalent to selecting the Composite box in the process property sheet.

❖ **To create a composite process from the contextual menu:**

- ◆ Right-click the parent process symbol in the diagram window and select Change to Composite from the contextual menu.

The process symbol changes to the following symbol:



Opening a composite process

You can open a composite process using the following methods:

- ◆ Press CTRL + double-click the composite process symbol in the diagram.
or
Select Open Diagram from the contextual menu of the composite process symbol in the diagram.

The default sub-process diagram opens in the diagram window.

Closing a composite process

You can close a composite process using the following methods:

- ◆ Press CTRL + U in the sub-process diagram to go up to the default diagram.
or
Select Diagram→Go Up One Level from the contextual menu and select the parent business process diagram.
If several diagrams are opened in the workspace, you are requested to select the parent process diagram.

Setting a diagram as default diagram

You can set a diagram to be the default diagram by selecting the Default Diagram check box in the diagram property sheet.

Modifying process properties

You can modify the process properties using the following methods:

- ◆ From the process property sheet
- ◆ From the list of processes

☞ For more information on the different ways to modify the process properties, see section *Modifying object properties* in chapter *Managing Objects* in the *General Features Guide*.

Modifying the process display preferences

You can modify the following display preferences for a process using the Tools→Display Preferences command:

Preference	Description
Show stereotype	Displays the stereotype of the process
Show "Implemented by" icon	Displays the "Implemented by" icon on the symbol process
Show "Composite" icon	Displays the "Composite" icon on the symbol process

Defining organization units in a BPM

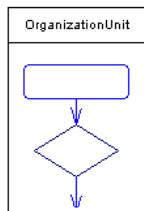
An **organization unit** is an optional element that allows you to define which organization is responsible for which process. It can represent a company, a system, a service, an organization, a user or a role. It can also be considered as a business partner who uses high level processes.

An organization unit is assigned to a process.

You can use internal and external shortcuts of organization units.

Swimlane representation

The organization unit is equivalent to the **swimlane** in UML. It allows you to have an organizational view of your processes and displays as follows:



A swimlane can contain all the symbols of a process diagram: processes, flows, decisions, etc.

Icon representation

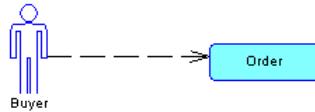
A general option allows you to switch to the icon representation of the organization unit to express the relationship that exists between a process and the user of that process. You must use extended dependencies between both objects to materialize that relationship.

If you want to switch to the icon representation, you have to select the Tools→Display Preferences→General command and deselect the Organization Unit Swimlane check box. You can also select the Disable Swimlane Mode from the Diagram or swimlane contextual menu.

An organization unit with an icon representation displays as follows and behaves like any other PowerDesigner objects:



In the following example, the organization unit (Buyer) uses the process (Order):



Using models from version 9

For models that have been created in version 9, organization units are represented with an icon. If you want to switch to the swimlane representation, you have to select the Tools→Display Preferences→General command and select the Organization Unit Swimlane check box.

Switching from one representation to another

When you switch from one representation to another, the following occurs in the diagram:

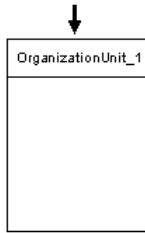
From	What happens...
Swimlane to icon	The swimlane symbol is deleted, but the corresponding organization unit still exists in the Browser. To view the corresponding icon symbol, right-click the diagram background, select Show Symbols from the contextual menu, and select the check box for the corresponding organization unit. If processes are attached to the swimlane, their attachment still appears in the property sheet of the processes. For more information on how to attach a process to an organization unit, see section Attaching a process to an organization unit
Icon to swimlane	The icon symbol for the organization unit is deleted and automatically replaced with a swimlane if the icon organization unit had a process attached to it, otherwise you must display the swimlane symbol using the Show Symbols feature

Organization unit properties in a BPM

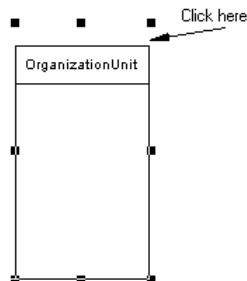
When the organization unit is a swimlane, you do not open its property sheet by double-clicking the object as you do for any other PowerDesigner objects.

You must:

- ◆ Position the cursor above the organization unit symbol until you see a vertical arrow pointing to the frame



- ◆ Click with the left mouse button to display a selection frame around the symbol.
- ◆ Double-click the zone between the selection frame and the swimlane to open the property sheet of the organization unit.



The organization unit property sheet displays the following properties:

Property	Description	Maximum length
Name	Name of the organization unit	254
Code	Reference name of the organization unit	254
Comment	Descriptive comment for the organization unit	—
Stereotype	Extends the semantics of an organization unit derived from existing organization units but specific to your needs	254
Parent organization	Displays the parent organization unit	254

Stereotype You can select a predefined stereotype from the dropdown listbox. You can also type stereotypes directly in the Stereotype column of the object property sheet or select a value from the dropdown listbox if you have previously defined stereotypes in an embedded or imported extended model definition (.XEM).

For more information on extended model definitions, see section Working with extended model definitions in chapter Managing Objects in the *General Features Guide*.

An organization unit has the following predefined stereotypes:

Stereotype	Description
Role	Defines a role a user plays
User	Defines a user
Group	Defines a group of users
Company	Defines a company
Organization	Defines an organization as a whole
Division	Defines a division in a global structure
Service	Defines a service in a global structure

Parent organization The Parent dropdown listbox lists all organization units in the model. Each time an organization unit is selected, it becomes the parent of another organization unit, the latter becoming the child. This relationship is also displayed in the Organization Units tabbed page of the Dependencies page in the property sheet of the child organization unit.

Creating an organization unit in a BPM

There are several ways to create an organization unit:

- ◆ From a diagram
- ◆ From the Browser
- ◆ From the list of organization units

At creation, an organization unit has a default name including a number, this number is assigned in the order of creation.

☞ For more information on the different ways to create an organization unit, see section **Creating an object** in chapter **Managing Objects** in the *General Features Guide*.

You can choose to create an organization unit as a swimlane or as an icon.

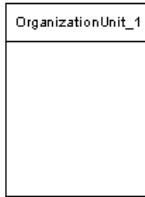
Creating an organization unit as a swimlane from a diagram

Before you create an organization unit from a diagram with the swimlane representation, you must select the **Organization Unit Swimlane** check box in the **Display Preferences** dialog box or right-click the diagram background and select the **Enable Swimlane Mode** command from the contextual menu.

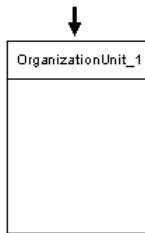
❖ To create an organization unit as a swimlane from a diagram:

- 1 Click the Organization Unit tool.
- 2 Click anywhere in the diagram.

The following symbol appears at the click position:

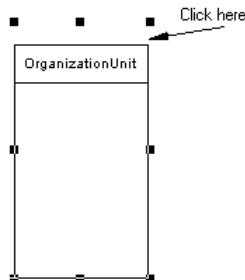


- 3 Click the right mouse button to release the Organization Unit tool.
- 4 Position the cursor above the organization unit symbol until you see a vertical arrow pointing to the frame.

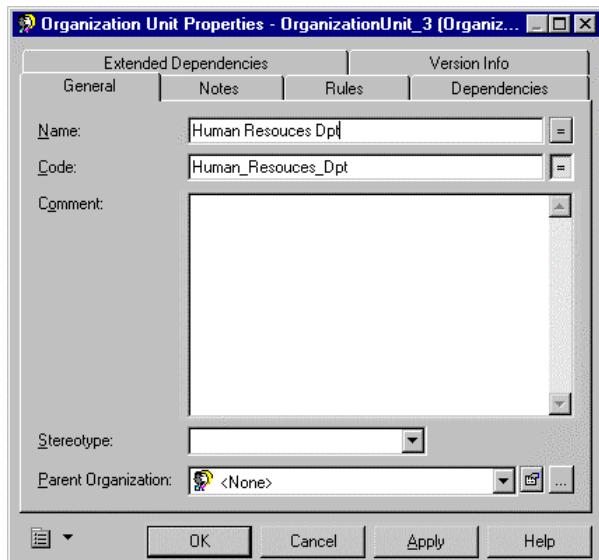


- 5 Click with the left mouse button to display a selection frame around the symbol.

6 Double-click the zone between the selection frame and the swimlane to open the property sheet of the organization unit.



7 Type a name and a code.



8 <Optional> Type or select a stereotype in the Stereotype dropdown listbox.
 9 <Optional> Type or select a parent organization in the Parent Organization dropdown listbox.
 10 Click OK.

Group Symbols not available

You cannot use the Symbol→Group Symbols feature to group organization units/swimlanes in the business process diagram.

Creating an organization unit as an icon from a diagram

Before you create an organization unit from a diagram with the icon representation, you must deselect the Organization Unit Swimlane check box in the Display Preferences dialog box or right-click the diagram background and select the Disable Swimlane Mode command from the contextual menu.

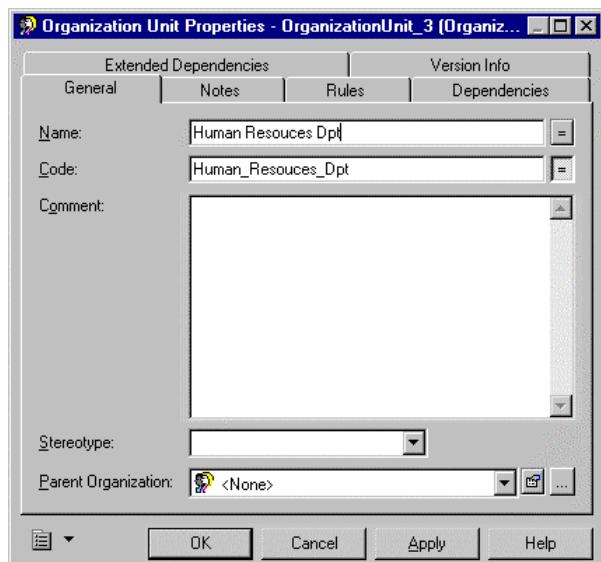
❖ To create an organization unit as an icon from a diagram:

- 1 Click the Organization Unit tool.
- 2 Click anywhere in the diagram.

The following symbol appears at the click position:



- 3 Click the Pointer tool.
or
Click the right mouse button.
- 4 Double-click the organization unit symbol to display the organization unit property sheet.
- 5 Type a name and a code.



- 6 <Optional> Type or select a stereotype in the Stereotype dropdown listbox.
- 7 <Optional> Type or select a parent organization in the Parent Organization dropdown listbox.
- 8 Click OK.

Attaching a process to an organization unit

When a process is attached to an organization unit, the organization unit name appears in the Organization Unit dropdown listbox of the process property sheet.

If the organization is a swimlane This attachment is graphically materialized by displaying the process within the swimlane in the process diagram

If the organization unit is an icon This attachment is not graphically materialized. You can only see it by opening the process property sheet

❖ **To attach a process to an organization unit:**

- ◆ Double-click the process in the diagram to open the process property sheet. Select an organization unit from the Organization Unit dropdown listbox and click OK.
or
(For swimlane organization units only) Click the Process tool in the palette and click in the required swimlane.

The organization unit name automatically appears in the Organization Unit dropdown listbox.

Pressing the ALT key

You can easily attach an existing process to a swimlane by selecting the process symbol in the diagram, pressing the ALT key and dragging the process to the swimlane.

Detaching a process from an organization unit

❖ **To detach a process from an organization unit:**

- ◆ Select <None> in the Organization Unit dropdown listbox in the process property sheet.
or
(For swimlane organization units only) Press the ALT key while clicking the process symbol in the diagram, and drag the process outside the swimlane.

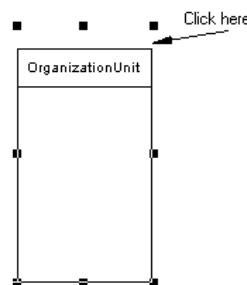
Modifying organization unit properties in a BPM

You can modify the organization unit properties using the following methods:

- ◆ From the organization unit property sheet
- ◆ From the list of organization units

☞ For more information on the different ways to modify the organization unit properties, see section *Modifying object properties* in chapter *Managing Objects* in the *General Features Guide*.

If the organization unit is a swimlane, you open its property sheet by double-clicking the zone between the selection frame and the swimlane:



☞ For more information on how to open the property sheet of a swimlane, see section *Creating an organization unit as a swimlane from a diagram*.

Managing swimlanes in a BPM

All symbols displayed in the diagram and associated with an organization unit must be drawn in the corresponding swimlane. Process symbols are slightly different because you can attach processes to a swimlane, thus if you change the attachment of a process, its symbol moves to the appropriate swimlane.

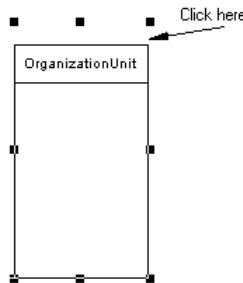
☞ For more information on attaching a process to a swimlane, see section Attaching a process to an organization unit.

You can move, copy and paste, resize, or delete a swimlane. You can also modify its format preferences.

Selecting swimlanes in a BPM

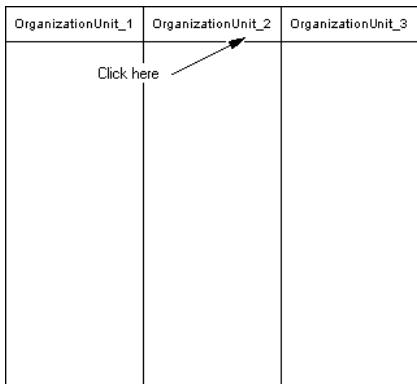
Selecting a single swimlane

To select a swimlane, position the cursor above the organization unit symbol until you see a vertical arrow pointing to the frame, then click the left mouse button.



Selecting all swimlanes

All swimlanes within a diagram are called a **set of swimlanes**. There can only be one set of swimlanes per diagram. To select the entire set of swimlanes, click in the header of one of the swimlanes.



Moving, copying and pasting swimlanes in a BPM

You can move an individual swimlane to another location. You can also move the **entire** set of swimlane to another location but it is not possible to move several swimlanes simultaneously.

You can move or copy a swimlane and paste it to the following locations:

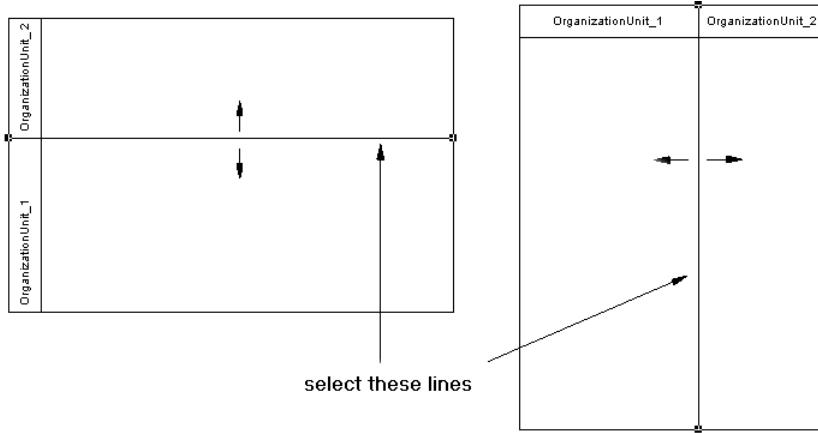
Diagram	What happens...
Different	When you move or copy the swimlane as an individual symbol to another folder or diagram, the symbols that exist inside the swimlane are not copied
Same	When you move a swimlane within the same diagram, you change the order of swimlanes inside the set of swimlanes. In this case, all symbols inside the swimlane are moved at the same time (even if some elements are not attached to the swimlane). This is to preserve the layout of the diagram

If you move attached processes inside a swimlane, the width or height of the swimlane varies to include all attached processes.

When you move or copy an entire set of swimlanes and paste it into a different diagram, the symbols that exist inside the swimlanes are not copied.

Resizing swimlanes in a BPM

You resize a swimlane by selecting one of the two sidelines of the swimlane. Depending if you use vertical or horizontal swimlanes, you can drag the cursor to change the size of the swimlane as shown below:



When you change the width or height of an individual swimlane, all process symbols attached to the swimlane keep their position.

You can also resize the entire set of swimlanes by selecting one of the handles around the set of swimlanes and drag it to any direction.

☞ For more information on the selection of swimlanes and set of swimlanes, see section [Selecting swimlanes in a BPM](#).

☞ For more information on how to select swimlane orientation, see section [Modifying the organization unit display preferences in a BPM](#).

Changing the symbol format of a swimlane in a BPM

You can change the format of a swimlane individually or the format of the entire set of swimlanes from the [Symbol Format dialog box](#).

❖ To change the symbol format of a swimlane:

- 1 Position the cursor above the swimlane until you see a vertical arrow pointing to the frame, click the right mouse button and select [Format](#) from the contextual menu to display the [Symbol Format dialog box](#).
- 2 Type or select changes in the different tabbed pages.
- 3 Click [OK](#).

Modifying the organization unit display preferences in a BPM

You can define the following display preferences for an organization unit using the Tools→Display Preferences→General command:

Preference	Description
Organization unit swimlane	Displays the organization unit as a swimlane. If the check box is deselected, the organization unit displays as an icon
Vertical	When the Organization unit swimlane check box is selected, displays swimlane horizontally in the diagram
Horizontal	When the Organization unit swimlane check box is selected, displays swimlane vertically in the diagram

Another display preference is available for an organization unit using the Tools→Display Preferences→Object View command:

Preference	Description
Show stereotype	Displays the stereotype of the organization unit

Defining flows in a BPM

A **flow** describes an interaction between two objects with potential exchange of data. It is represented as a line going from one object to another. It is a route the flow transits on to link objects. The routing of the flow is made using guard conditions defined on the flow. If the condition is true, the flow is passed to the next object in the sequence.

Two flows can be defined between the same source and destination objects (**parallel flows**).

The flow link is represented as a simple line with a direction (arrow):



You can draw a flow from and to the following business process diagram objects:

From\To	Start	Decision	Synchronization	Process	End
Start	—	✓	✓	✓	—
Synchronization	—	✓	✓	✓	✓
Decision	—	✓	✓	✓	✓
Process	—	✓	✓	✓	✓
End	—	—	—	—	—

✓ = allowed

— = not allowed

Dragging a flow to a different object

You change the object at either end of a flow by clicking the flow to select it, holding the CTRL key down, and dragging one of the attach points to a different object.

Message format

You can associate a message format to a flow in case of data exchange between objects, in order to define the type of the accessed data. With the Check Model feature you can verify the coherence between the message format defined in the flow and the message format accepted by the object.

☞ For more information on message formats, see section Defining message formats in a BPM.

☞ For more information on the Check Model feature, see chapter Working with Business Process Models.

Linking shortcuts A flow can link shortcuts. As process shortcuts in a diagram designate the invocation of external processes, a flow between two process shortcuts designate a transition between two processes invocation.

Constraints on flows **Reflexive flows** only exist on processes (same source and destination process)

Flow properties

You can double-click any flow symbol in a diagram to display its properties.

Property	Description	Maximum length
Name	Name of the flow	254
Code	Reference name of the flow	254
Comment	Descriptive comment for the flow	—
Source	Where the flow starts from. You can click the Properties tool beside this box to display the source object property sheet	254
Destination	Where the flow ends on. You can click the Properties tool beside this box to display the destination object property sheet	254
Stereotype	Sub-classification derived from an existing flow	254
Transport	Definition of the way data flow is vehicled	254
Flow type	Definition of the type of the flow	254
Message format	Definition of data exchanged between processes	254

Transport

Transport is meant to be used for documentation purposes only. It gives information on the way the data flow is vehicled.

You can create your own type of transport in the Transport dropdown listbox, or you can choose one of the following values:

- ◆ Fax delivery
- ◆ Mail
- ◆ Telephone

Flow type

You can create your own type of flow in the Flow Type dropdown listbox, or you can choose one of the following values:

Flow type	Description
Success	Defines a successful flow
Timeout	Defines a timeout limit
Technical error	Represents a technical error
Business error	Represents a business error

Message format of a flow

You can choose one of the following values:

Message format	Description
None	When selected, it indicates that no data are exchanged
Undefined	Default value. When selected, it indicates that message formats will be defined later

You can click the Create tool beside the Message Format dropdown listbox to create a message format for your flow.

 For more information on message format, see section [Defining message formats in a BPM](#).

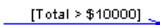
Condition in a flow

A condition is a parameter that applies to a flow. When there are several flows, each condition is evaluated in order to choose the one the flow will transit on. The Condition page defines the nature of the condition attached to a flow.

The Condition page contains the following parameters:

Parameter	Description
Alias	Summarizes the condition attached to a flow. It is recommended to write an alias (short editor) when using a long condition in order to display the alias instead of the condition in the diagram
Editor	Details the condition. For example, you can write information on the condition to execute, as well as open, insert and save any text files containing valuable information

The Alias (or Editor, if the Alias box is empty) is displayed near the source symbol as shown below:

 [Total > \$10000]

If you do not type any alias or editor in the corresponding boxes and if the flow type is not the default value (Success), then the displayed condition will be the flow type.

 [Business Error]

Opening the Condition page

You can open the Condition page by right-clicking the flow symbol in the diagram, and selecting Condition from the contextual menu.

Data page of the flow

A data defines the type of information exchanged between business processes and transported by a flow.

The Data page allows you to select data that will be transported by the flow from a selection list.

You can view in the diagram the list of data transported by a flow by selecting Tools→Display Preferences→Flow and select the Show Data List check box. The list of data appears on the flow in the diagram.

 For more information on how to select data for a flow, see section Selecting data for a flow or a message format.

You can also migrate the data of a flow to its source or destination process, using the Migrate to destination process and Migrate to source process tools in the property sheet toolbar.

☞ For more information on how migrate data to process, see section Migrating the data of a flow to a process.

Creating a flow

There are several ways to create a flow:

- ◆ From a diagram
- ◆ From the Browser
- ◆ From the list of flows

At creation, a flow has a default name including a number, this number is assigned in the order of creation.

When you create a flow from the Browser or from the list of flows, you must previously define source and destination objects for the flow.

☞ For more information on the different ways to create a flow, see section Creating an object in chapter Managing Objects in the *General Features Guide*.

❖ To create a flow from a diagram:

- 1 Click the Flow/Resource Flow tool.
- 2 Click inside the first process and while continuing to hold down the mouse button, drag the cursor to the second process. Release the mouse button inside the second process.

The flow link appears between the two processes.



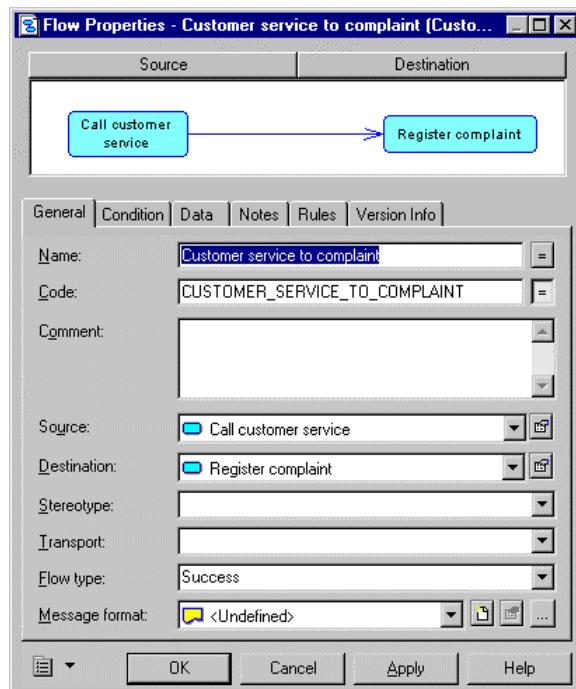
Dragging a flow to a different process

You change the process at either end of a flow by clicking the flow to select it, holding the CTRL key down, and dragging one of the attach points to a different process.

- 3 Click the Pointer tool.
or
Click the right mouse button.

You release the Flow/Resource Flow tool.

- 4 Double-click the flow in the diagram to display its property sheet.



Opening the property sheet of objects at ends

You can open the property sheet of the source and destination objects by clicking the Source and Destination buttons located in the upper part of the flow property sheet.

- 5 Type or select flow properties as required in the tabbed pages.
- 6 Click OK.

Displaying flows from the process property sheet

Flows coming in and out the process are also displayed in the process property sheet. You can display those flows from the Input Flows or Output Flows tabbed page of the Dependencies page.

Modifying flow properties

You can modify the flow properties using the following methods:

- ◆ From the flow property sheet
- ◆ From the list of flows

☞ For more information on the different ways to modify the flow properties, see section *Modifying object properties* in chapter *Managing Objects* in the *General Features Guide*.

Modifying the flow display preferences

You can modify the following display preferences for a flow using the Tools→Display Preferences command:

Preference	Description
Show stereotype	Displays the stereotype of the flow
Show message format symbol	Displays the symbol of the message format for the flow
Show Data List	Displays the list of data for the flow
Show name	Displays the name of the flow
None	Displays nothing on the flow

Except for the Show stereotype preference, which is a check box, all other preferences are mutually exclusive.

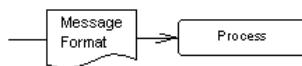
Defining message formats in a BPM

A **message format** defines the format of a piece of information exchanged between business processes. The format depends on the nature of the exchanged piece of information and allows objects to find an agreement to communicate. Business processes exchange information using resource flows and process flows. You can have a flow without any message format if no information is exchanged.

☞ For more information on resource flows, see section Defining resource flows in a BPM.

A message format can be an XML document, for which you will have to specify the DTD (Document Type Definition) or the XML schema, or parameters of a procedure call, for which you will have to specify the list of exchanged parameters with their data types, the parameter names and the in/out information. An administrative form can also represent a message format.

The message format is displayed in the diagram only in association with the flow that uses it. As you create a message format from the flow property sheet, its symbol is linked to the flow symbol, and appears centered on the flow line as shown below:



If you move the flow, the message format moves accordingly.

You cannot copy a message format symbol, and if you delete its symbol in the diagram, the message format value is set to None in the Message Format box of the flow property sheet.

☞ For more information on message format options, see section Defining BPM options in chapter Business Process Model Basics.

Message format properties

You can double-click any message format symbol in a diagram to display its properties.

Property	Description	Maximum length
Name	Name of the message format	254

Property	Description	Maximum length
Code	Reference name of the message format	254
Comment	Descriptive comment for the message format	—
Stereotype	Sub-classification derived from an existing message format	254
Message format type	Definition of the type of the message format	254

Message format type

You can type your own type of message format or you can choose one of the following values in the Message Format Type dropdown listbox:

Message format type	Description
Undefined	When selected, it indicates that you do not need to specify a type for your message format for data to be properly processed
XML schema	When selected, it indicates that your message format needs an XML schema for data to be properly processed
DTD	When selected, it indicates that your message format needs a DTD for data to be properly processed

Definition (message format)

A Definition is a parameter that applies to a message format. The Definition page specifies the definition of the message format attached to the flow.

It contains the following parameters:

Parameter	Description
Definition type	Indicates whether the message format definition is stored within the object (Embedded), or externally (MS Word file, URL, etc.): <ul style="list-style-type: none">◆ Embedded file: Indicates that the message format definition is stored within the object. You can directly type the definition in the Editor box◆ External file and URL: Indicates that the message format definition is specified outside the model. It can be a file that you access on your disk or via a given drive or a Web address
External definition	Allows you to define the location path of an external file or an URL. This box is grayed out when you select Embedded file in the Definition Type zone
Editor	Allows you to detail the definition. For example, you can write information about the DTD or the list of parameters, as well as open, insert and save any text files containing valuable information. This box is grayed out when you did not select Embedded for the definition type of your message format

Opening the Definition page

You can open the Definition page by right-clicking the message format symbol in the diagram, and selecting Definition from the contextual menu.

Data (message format)

A data defines the type of information exchanged between business processes and transported by a message format.

The Data page allows you to select data that will be transported by the message format from a selection list.

You can display in the diagram the list of data transported by a message format by selecting Tools→Display Preferences→Flow (or Resource Flow) and select the Show Data List check box. The list of data appears on the flow in the diagram.

☞ For more information on how to select data for a flow, see section Selecting data for a flow or a message format.

Creating a message format

There are several ways to create a message format:

- ◆ From a flow property sheet
- ◆ From the Browser
- ◆ From the list of message formats

At creation, a message format has a default name including a number, this number is assigned in the order of creation.

☞ For more information on the different ways to create a message format, see section **Creating an object** in chapter **Managing Objects** in the *General Features Guide*.

❖ **To create a message format from a flow property sheet:**

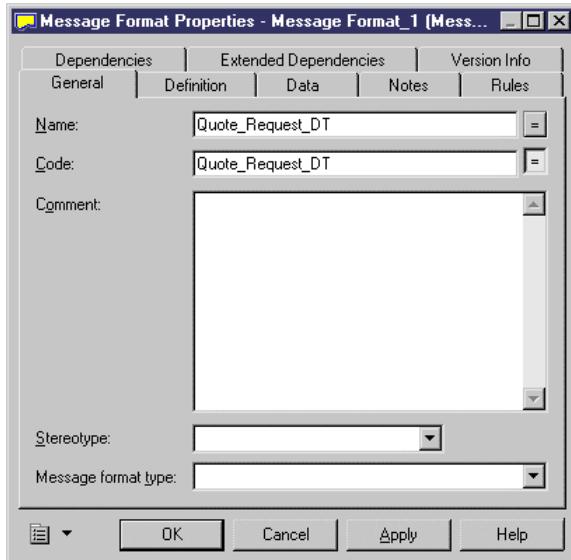
- 1 Double-click a flow symbol in the diagram to display its property sheet.
- 2 Click the Create tool beside the Message Format dropdown listbox located in the lower part of the flow property sheet.

A confirmation box asks you to commit the object creation.

- 3 Click Yes.

The message format property sheet appears.

- 4 Type or select message format properties as required in the tabbed pages.



- 5 Click OK.

Modifying message format properties

You can modify the message format properties using the following methods:

- ◆ From the message format property sheet
- ◆ From the list of message formats

☞ For more information on the different ways to modify the message format properties, see section *Modifying object properties* in chapter *Managing Objects* in the *General Features Guide*.

Defining resources in a BPM

A **resource** is similar to a data store. It can be a data, a document, a database, a component, or an executable. It is a special asset that a process can use.

You access data stored in the resource using the resource flow object.

☞ For more information on the resource flow, see section [Defining resource flows in a BPM](#).

You are not allowed to create shortcuts of a resource.

Resource properties

You can double-click any resource symbol in a diagram to display its properties.

Property	Description	Maximum length
Name	Name of the resource	254
Code	Reference name of the resource	254
Comment	Descriptive comment for the resource	—
Stereotype	Extends the semantics of a resource derived from existing resources but specific to your needs	254

Stereotype

You can select a predefined stereotype from the dropdown listbox. You can also type stereotypes directly in the Stereotype column of the object property sheet or select a value from the dropdown listbox if you have previously defined stereotypes in an embedded or imported extended model definition (.XEM).

☞ For more information on extended model definitions, see section [Working with extended model definitions](#) in chapter [Managing Objects](#) in the *General Features Guide*.

Creating a resource

There are several ways to create a resource:

- ◆ From a diagram
- ◆ From the Browser
- ◆ From the list of resources

At creation, a resource has a default name including a number, this number is assigned in the order of creation.

☞ For more information on the different ways to create a resource, see section **Creating an object** in chapter **Managing Objects** in the *General Features Guide*.

❖ To create a resource from a diagram:

- 1 Click the Resource tool.
- 2 Click anywhere in the diagram.

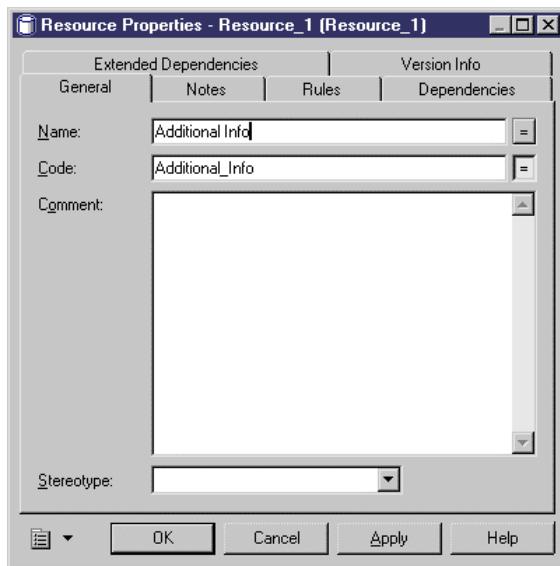
The following symbol appears at the click position:



- 3 Click the Pointer tool.
or
Click the right mouse button.
- 4 You release the Resource tool.

- 4 Double-click the resource symbol to display the resource property sheet.

5 Type a name and a code.



6 Click OK.

Modifying resource properties

You can modify the resource properties using the following methods:

- ◆ From the resource property sheet
- ◆ From the list of resources

☞ For more information on the different ways to modify the resource properties, see section *Modifying object properties* in chapter *Managing Objects* in the *General Features Guide*.

Modifying the resource display preference

You can modify the following display preference for a resource using the Tools→Display Preferences command:

Preference	Description
Show stereotype	Displays the stereotype of the resource

Defining resource flows in a BPM

A **resource flow** allows a process to access a resource. The resource flow link is represented as a dashed line with a direction (arrow):

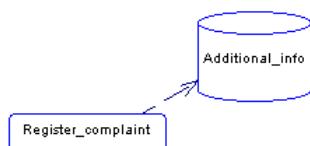


Access modes

The access mode to a resource determines the resource flow direction.

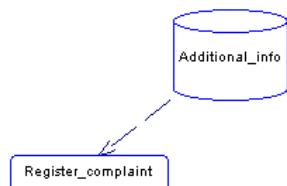
When the resource flow comes from the process, the access to a resource can be of the following types: Create, Update, or Delete.

The following schema illustrates a resource flow coming from a process indicating that the process creates, updates or deletes data contained in the resource depending on the access modes selected:

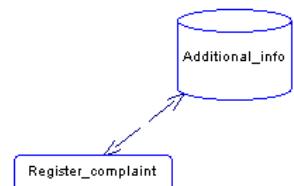


When the resource flow comes from the resource, the access to a resource is always Read.

The following schema illustrates a resource flow coming from a resource indicating that the data contained in the resource are read by the process:



If you select several access modes on a resource flow ; Read access together with one or several other access modes (Create, Update, Delete), the flow looks as follows:



Two resource flows can be defined between the same process and resource (**parallel resource flows**).

Message format

You can associate a message format to the resource flow in case of data exchange between a process and a resource, in order to define the type of the accessed data. With the Check Model feature you can verify the coherence between the message format defined in the resource flow and the message format accepted by the process.

☞ For more information on message formats, see section [Defining message formats in a BPM](#)

☞ For more information on the Check Model feature, see chapter [Working with Business Process Models](#).

Dragging a resource flow to a different object

You change the object at either end of a resource flow by clicking the resource flow to select it, holding the CTRL key down, and dragging one of the attach points to a different object.

Constraints on resource flows

The following constraints apply to resource flows:

- ◆ **Reflexive flows** only exist on processes (same source and destination process)
- ◆ A resource flow cannot link shortcuts

Resource flow properties

You can double-click any resource flow symbol in a diagram to display its properties.

Property	Description	Maximum length
Name	Name of the resource flow	254
Code	Reference name of the resource flow	254
Comment	Descriptive comment for the resource flow	—

Property	Description	Maximum length
Process	One extremity of the resource flow (process). You can click the Properties tool beside this box to display the process property sheet	254
Resource	Other extremity of the resource flow (resource). You can click the Properties tool beside this box to display the resource property sheet	254
Stereotype	Sub-classification derived from an existing resource flow	254
Message format	Abstract definition of data exchanged between a resource and a process	254
Access mode	Way to access data. Defines the resource flow direction	—

Message format of a resource flow

You can choose one of the following values:

Message format	Description
None	When selected, it indicates that you do not want any message format for your flow as the event is of minor importance
Undefined	When selected, it indicates that message formats will be defined later

You can click the Create tool beside the Message Format dropdown listbox to create a message format for your flow.

Access mode

Access modes determine the direction of the resource flow. You can choose one of the following access modes to access data in a resource:

Direction	Access Mode
Resource to process	Read
Process to resource	Create, Update, Delete

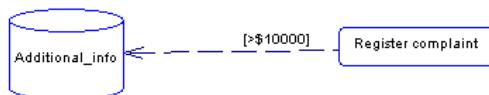
Condition in a resource flow

A condition is a parameter that applies to a resource flow. When there are several flows, each condition is evaluated in order to choose the one the resource flow will transit on. The Condition page defines the nature of the condition attached to a resource flow.

The Condition page contains the following parameters:

Parameter	Description
Alias	Summarizes the condition attached to a resource flow. It is recommended to write an alias (short editor) when using a long condition in order to display the alias instead of the condition in the diagram
Editor	Details the condition. For example, you can write information on the condition to execute, as well as open, insert and save any text files containing valuable information

Whatever the direction of the resource flow, the condition is displayed near the process symbol as shown below:



Opening the Condition page

You can open the Condition page by right-clicking the resource flow symbol in the diagram, and selecting Condition from the contextual menu.

Data page of the resource flow

A data defines the type of information exchanged between business processes and transported by a flow.

The Data page allows you to select data that will be transported by the resource flow from a selection list.

You can view in the diagram the list of data transported by a resource flow by selecting Tools→Display Preferences→Resource Flow and select the Show Data List check box. The list of data appears on the flow in the diagram.

☞ For more information on how to select data for a resource flow, see section Selecting data for a flow or a message format.

Creating a resource flow

There are several ways to create a resource flow:

- ◆ From a diagram
- ◆ From the Browser
- ◆ From the list of resource flows

At creation, a resource flow has a default name including a number, this number is assigned in the order of creation.

When you create a resource flow from the Browser or from the list of resource flows, you must previously define a process object and a resource object for the resource flow.

 For more information on the different ways to create a resource flow, see section *Creating an object* in chapter *Managing Objects* in the *General Features Guide*.

❖ To create a resource flow from a diagram:

- 1 Click the Flow/Resource Flow tool.
- 2 Click inside the process and while continuing to hold down the mouse button, drag the cursor to the resource. Release the mouse button inside the resource. The access mode will be Update by default.
or
Click inside the resource and while continuing to hold down the mouse button, drag the cursor to the process. Release the mouse button inside the process. The access mode is Read by default.

The resource flow link appears between the process and the resource.



Dragging a resource flow to a different process or resource

You change the process or resource at either end of a resource flow by clicking the resource flow to select it, holding the CTRL key down, and dragging one of the attach points to a different process or resource.

- 3 Click the Pointer tool.
or
Click the right mouse button.

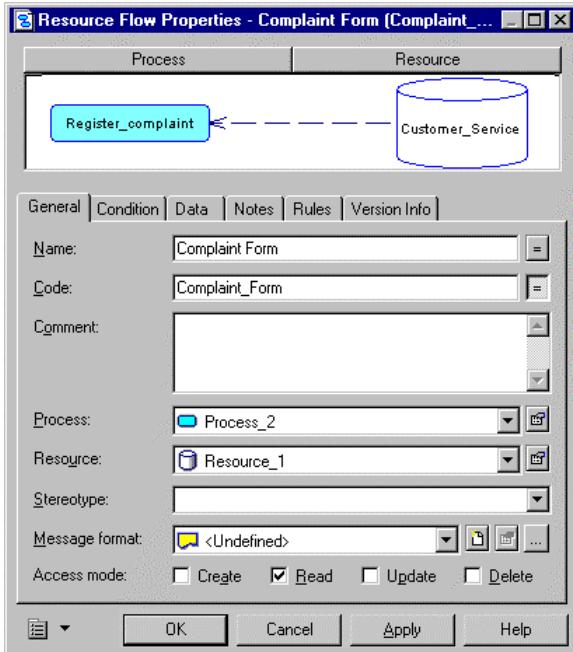
You release the Flow/Resource Flow tool.

- Double-click the resource flow in the diagram to display its property sheet.

Opening the property sheet of objects at ends

You can open the property sheet of the process and resource objects by clicking the Process and Resource buttons located in the upper part of the resource flow property sheet.

- Type or select resource flow properties as required in the tabbed pages.



- Click OK.

Displaying resource flows from the process or resource property sheets

Resource flows linked to a resource or a process are also displayed in the process or resource property sheet. You can display those resource flows from the Resource Flows tabbed page of their Dependencies page.

Modifying resource flow properties

You can modify the resource flow properties using the following methods:

- ◆ From the resource flow property sheet
- ◆ From the list of resource flows

☞ For more information on the different ways to modify the resource flow properties, see section **Modifying object properties** in chapter **Managing Objects** in the *General Features Guide*.

Modifying the resource flow display preferences

You can modify the following display preferences for a resource flow the Tools→Display Preferences command:

Preference	Description
Show stereotype	Displays the stereotype of the resource flow
Show message format symbol	Displays the symbol of the message format for the resource flow
Show Data List	Displays the list of data for the resource flow
Show name	Displays the name of the resource flow
None	Displays nothing on the resource flow

Except for the Show stereotype preference, which is a check box, all other preferences are mutually exclusive.

Defining data in a BPM

A **data** allows you to identify the type of information exchanged between business processes at a high conceptual level, focusing more on the semantic of the information than on technical aspects, such as physical data type, check parameters, etc. Business processes exchange information using resource flows and process flows.

A data can be attached to:

- ◆ A flow or a resource flow
- ◆ A message format
- ◆ A process

When a data is...	It allows you to...
Transported by a flow or a resource flow	Identify the type of information exchanged between a resource and a process or between processes
Transported by a message format	Identify the type of information a message format can represent
Used by a process	Identify the type of action the process does on the data for the process to be executed

☞ For more information on how to attach a data to a flow or resource flow, to a message format or to a process, see sections Selecting data for a flow or a message format, and Selecting data for a process.

A data can be transported by several flows and message formats, but a flow or a message format cannot transport the same data twice. Same for the process, which cannot use the same data twice.

You can specify a type to a data and link the data to an object in order to specify the nature of the piece of information exchanged between business processes.

Business data can be considered as the entry point for specifying structural elements that you can analyze afterwards in Conceptual Data Models or UML Class Diagrams.

A data belongs to a package and can be referenced in other packages.

A data has no graphical symbol. You can nevertheless display a list of data on the flow symbol.

For more information on how to display a list of data on a process flow symbol or resource flow symbol, see section [Modifying the flow display preferences](#) or section [Modifying the resource flow display preferences](#).

Data properties

You access the data property sheet by double-clicking a data in the List of Data. You can display the following properties:

Property	Description	Maximum length
Name	Name of the data	254
Code	Reference name of the data	254
Comment	Descriptive comment for the data	—
Type	Type of the data	—
Stereotype	Sub-classification derived from an existing data	254
Definition	Object represented by the data. It can be OOM or CDM objects	—

Type

The following types can be used for a data to specify the kind of information exchanged between objects:

- ◆ Undefined. When you simply manipulate a data and do not yet know its nature
- ◆ Structured data. When the data contains a set of elementary data
- ◆ Elementary data. When the data cannot be decomposed

Definition (data)

You can link a data to an object in another model according to the type you selected in the Type dropdown listbox.

The Definition box is filled when you select an object to link to the data in the [Select an Object](#) dialog box.

The Select Object Definition button located beside the Definition box allows you to open that dialog box and select either a CDM entity, a CDM data item, or an OOM class depending on the selected type of data in the Type box and on the opened models in the workspace. If there is no adequate CDM or OOM objects available in the workspace, the Select Object Definition button is grayed out:

Data type	Object to select
Undefined	CDM entity, CDM data item, and OOM class
Elementary	CDM data item
Structured	CDM entity, and OOM class

The <Undefined> type automatically changes in the Type box according to the object you define in the Definition box. However, if you explicitly define a type before you select an object, you can only access objects related to the selected type. In addition, if you change the type of the data so that it is no longer coherent with the object defined in the Definition box, a message box asks you to confirm the change, and the link between the data and the object is removed.

After you have selected an object to be linked to the data, the text (Shortcut) appears after its name in the Definition box. When you click the Properties button beside the Definition box, you can open the shortcut property sheet and access the target object.

☞ For more information on how to link a data to an object, see section [Linking a data to an object](#).

Creating a data

You create a data from the List of Data.

At creation, a data has a default name including a number, this number is assigned in the order of creation.

❖ **To create a data from the list of data:**

1 Select Model→Data.

The list of data appears.

2 Click the Add a Row tool.

A new data is added to the list, with a default name you can modify.

3 Type a name and a code for the data.

- 4 Click OK.

Modifying data properties

You can modify the data properties using the following methods:

- ◆ From the data property sheet
- ◆ From the list of data

☞ For more information on the different ways to modify the data properties, see section **Modifying object properties** in chapter **Managing Objects** in the *General Features Guide*.

Linking a data to an object

After you have identified the type of information exchanged between business processes, you can specify the nature of the transported data by linking the data to a CDM or OOM object.

The object you can select for linking depends on the type you defined for the data.

☞ For more information on the different types a data can have, see section **Definition (data)**.

Only objects contained in models opened in the workspace can be selected.

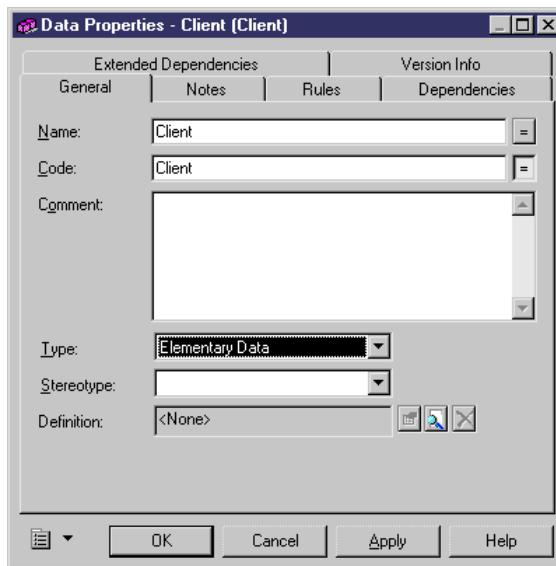
When you link a data to an object, the object name appears in the **Definition** box of the data property sheet.

☞ For more information on the **Definition** box, see section **Definition (data)**.

❖ **To link a data to an object:**

- 1 Open the data property sheet.

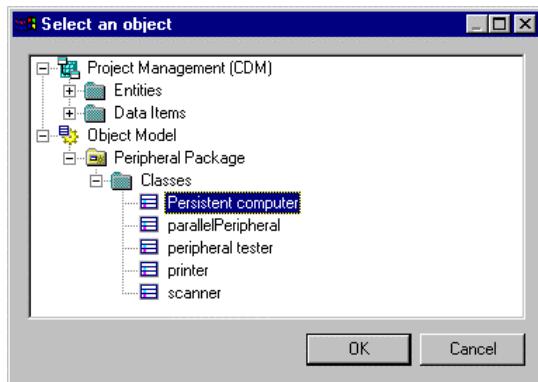
- 2 Select a type from the Type dropdown listbox.



- 3 Click the Select Definition Object beside the Definition box.

The Select an Object dialog box appears. It allows you to select an object from a model opened in the workspace corresponding to the type of data you selected.

- 4 Select an object in the tree view and click OK.



The object name followed by (Shortcut) appears in the Definition box of the data property sheet. You can double-click the Properties tool beside the Definition box to open the shortcut property sheet and access the target object.

Deleting the link with an object from the data property sheet

You can click the Remove Link tool beside the Definition button to break the link between the data and the object.

Modifying the type of a data from the data property sheet

When you change the type of the data so that it no longer corresponds to the object defined in the Definition box, a message box asks you to confirm the change, and the link between the data and the object is broken.

Selecting data for a flow or a message format

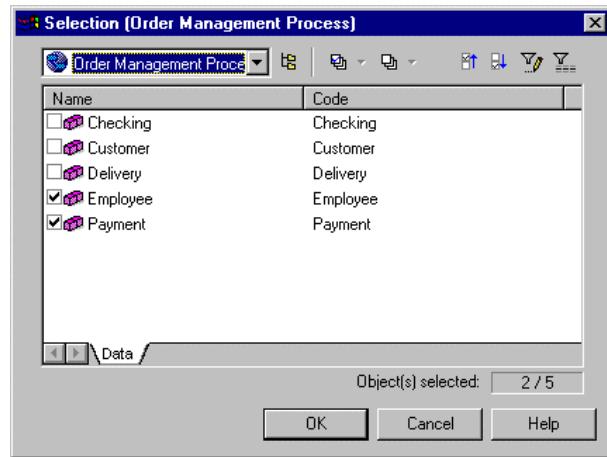
You can select data transported by process flows, resource flows and message formats from the Data page of their respective property sheet.

Each time you select a data from the list, it is added to the Data page of the flow or message format property sheet and no longer appears in the list of available data.

❖ **To select data for a flow or a message format:**

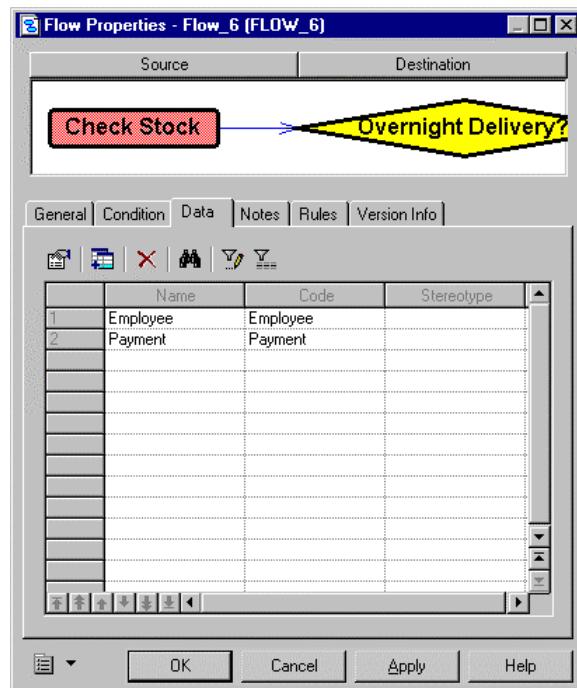
- 1 Double-click a process flow, a resource flow or a message format symbol in the diagram to open its property sheet.
- 2 Click the Data tab to open the corresponding page.
- 3 Click the Add Data tool to open a data selection list.
- 4 Click the down arrowhead in the upper part of the list to select a model or package from the dropdown list.

5 Select the data you want.



6 Click OK to close the selection list.

The selected data are added to the Data page of the flow, resource flow or message format property sheet and no longer appear in the available data selection list.



- 7 Click OK to close the property sheet.

Viewing the list of data transported by a flow or a message format

You can view in the diagram the list of data transported by a flow by selecting Tools→Display Preferences→Flow (or Resource Flow) and select the Show Data List check box. The list of data appears on the flow in the diagram or instead the message format symbol.

Selecting data for a process

You can add data to a process to identify the type of action the process does on the data to proceed to its execution from the Data page of its property sheet. Thus, you define a data access for that process.

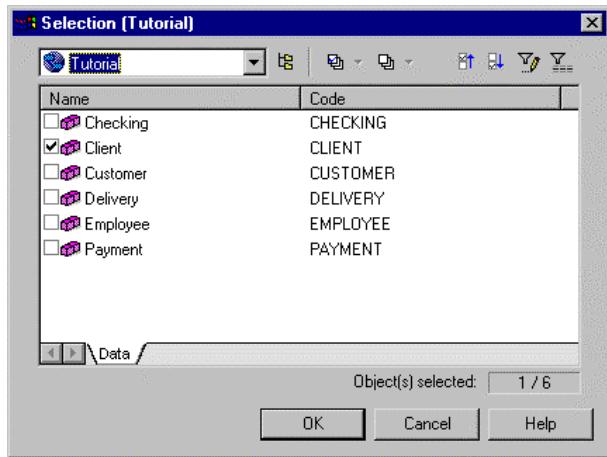
Each time you select a data from the list, it is added to the Data page of the process property sheet and no longer appears in the list of available data.

Once the data is added to the process, its access mode is Read by default. You can directly modify this value in the Data page.

❖ **To select data for a process:**

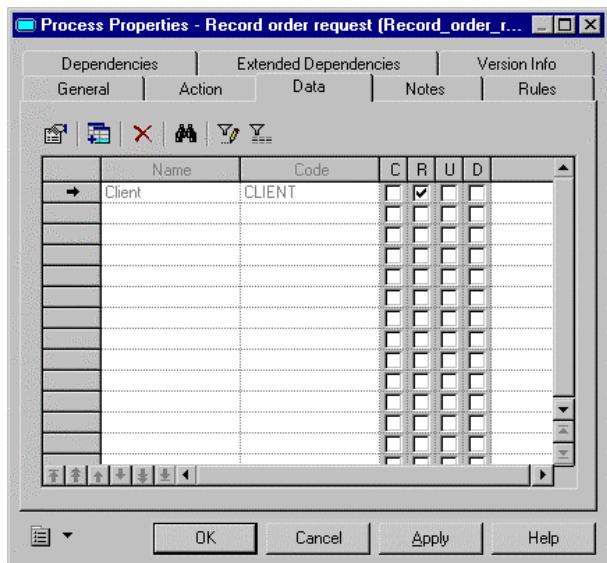
- 1 Double-click a process symbol in the diagram to open its property sheet.
- 2 Click the Data tab to open the corresponding page.
- 3 Click the Add Data tool to open a data selection list.
- 4 Click the down arrowhead in the upper part of the list to select a model or package from the dropdown list.

5 Select the data you want.



6 Click OK to close the selection list.

The selected data is added to the Data page of process property sheet and no longer appears in the available data selection list. Its access mode is Read by default.



7 Click OK to close the property sheet.

Adding a data to a process from the flow property sheet

You can migrate the data of a flow to its source or destination process, using the Migrate to destination process and Migrate to source process tools in the flow property sheet.

For more information, see section [Migrating the data of a flow to a process](#).

Migrating the data of a flow to a process

A flow can bring data to a process, using the Migrate to destination process and Migrate to source process tools in the flow property sheet. This functionality automatically creates a data access in the process property sheet for the data you migrated.

Depending on the data migration direction, the CRUD values in the process property sheet are as follows:

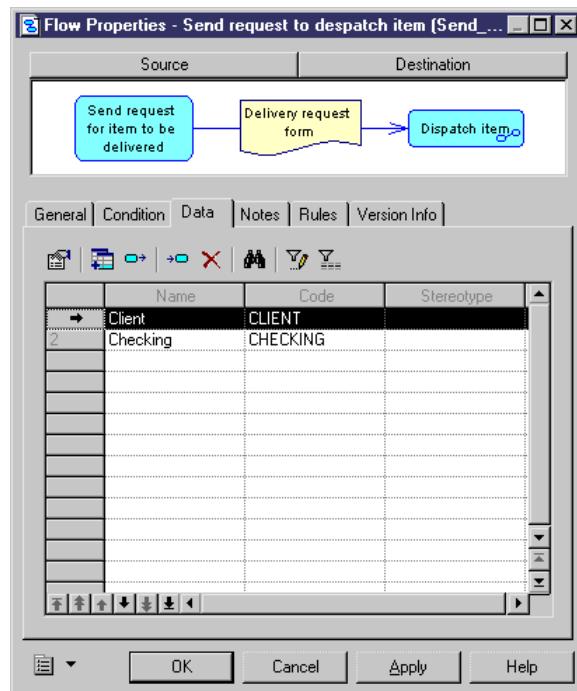
When the data is migrated to...	CRUD values
Source process	Create
Destination process	Read

You can multi-select data to migrate to a process in the flow property sheet.

❖ **To migrate the data of a flow to a process:**

- 1 Open a flow property sheet.
- 2 Click the Data tab to open the corresponding page.

- 3 Select the row for the data you want to migrate.



- 4 Click the Migrate to destination process or Migrate to source process tool.

A message box appears to indicate to which process the data was migrated. The General tab of the Output window also displays information on the migrated data.



- 5 Click OK to close the message box.
- 6 Click OK to close the property sheet.

Exchanging data

You can export and import data using the Tools menu.

Data export	Business data are conceptual piece of information that can be specified with more details in a Conceptual Data Model (CDM) or a class diagram of an Object Oriented Model (OOM).
	You export data from the current business process model to:
	<ul style="list-style-type: none">◆ A Conceptual Data Model (CDM)◆ An Object-Oriented Model (OOM)
	When you export data, you create objects in the CDM or OOM from the exported data. Exported data are automatically linked to the created objects in the BPM.
Data import	You import data to create or enrich a reference database that you will use to identify information exchanged between processes.
	You import data in a business process model from:
	<ul style="list-style-type: none">◆ A Conceptual Data Model (CDM)◆ An Object-Oriented Model (OOM)
	When you import data, you create data in the current BPM from objects selected in a CDM or OOM. Imported data are automatically linked to the selected objects in the source model.

Exporting data

You export data to a CDM and an OOM using the Tools menu.

You select data to export from the Data Export Wizard.

Only elementary and structured data that are not already linked to an object can be exported. Also, the model in which you want to export data must be opened in the workspace, otherwise the Data Export Wizard command is grayed out.

The export process converts data to CDM and OOM objects as follows:

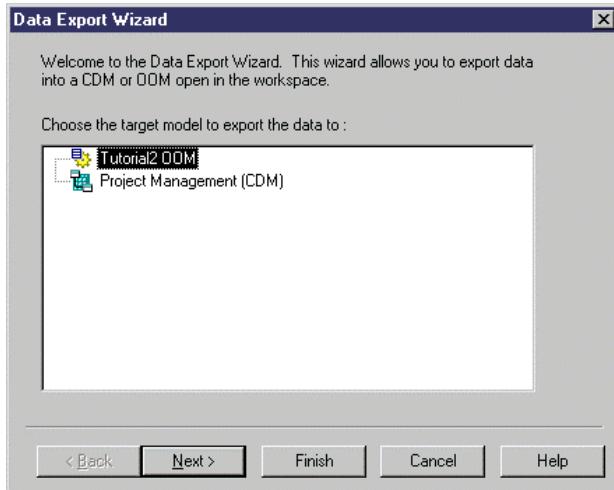
Data type	CDM	OOM
Elementary	Data item	—
Structured	Entity	Class

When you export a data that has the same name and code as an object contained in the CDM or OOM, no object will be created for that data. The data will be automatically linked to the existing object.

❖ **To export data:**

- 1 Select Tools→Data Export Wizard.

The Data Export Wizard opens. It contains all models and packages opened in the workspace to which you can export data.

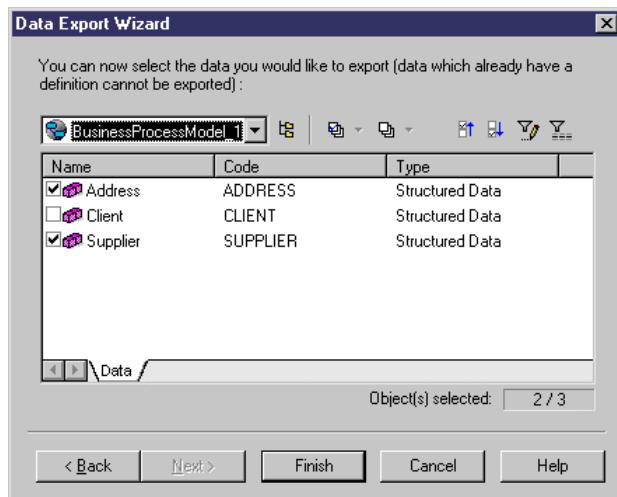


- 2 Select the CDM or OOM model or package to which you want to export data and click the Next button.

A data selection page appears. It contains a list of all the data you can export according to the type of model.

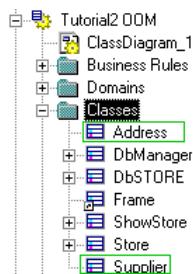
- 3 Click the down arrowhead in the upper part of the list to select a model or package from the dropdown list.

4 Select data to export.



5 Click the Finish button.

The result of the export is displayed in the Output window. You can view in the Browser tree view the creation of objects that correspond to the data you exported to the CDM or OOM:



Data re-export

As the link with the business data is saved in the exported CDM or OOM, you cannot re-export data already exported. If you want to re-export all the data of your BPM, you have to select Model→Target Models and delete the target model created during the export in order to delete all the shortcuts that reference it in the current BPM and be able to export the data again.

If you want to re-export a data individually, you can also remove the link to the object for the data you want to re-export.

Importing data

You import CDM and OOM objects as data into a BPM using the Tools menu.

You select objects to import from the Data Import Wizard.

If there is no CDM or OOM opened in the workspace, the Data Import Wizard command is grayed out.

The import process converts CDM and OOM objects to data as follows:

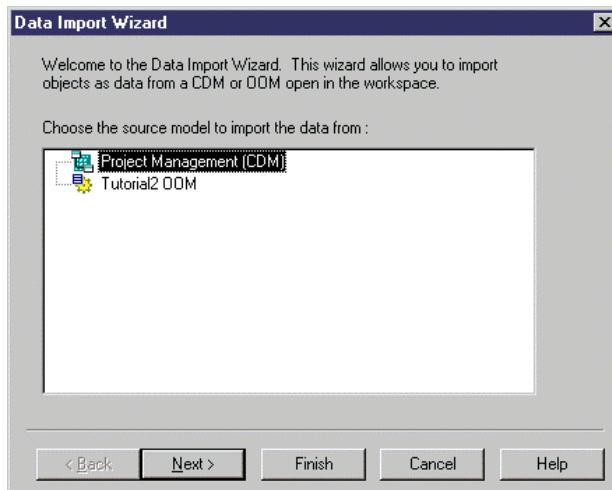
Model	Object	Data type
CDM	Data item	Elementary
	Entity	Structured
OOM	Class	Structured

When you import an object that has the same type, name and code as an existing data in the BPM, the new data is automatically renamed and linked to the selected object in the OOM or CDM.

❖ To import data:

- 1 Select Tools→Data Import Wizard.

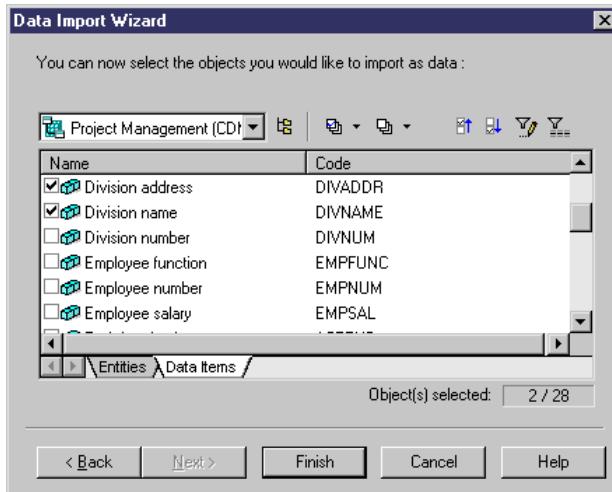
The Data Import Wizard opens. It contains all models or packages opened in the workspace from which you can import data.



- 2 Select the CDM or OOM model or package from which you want to import data and click the Next button.

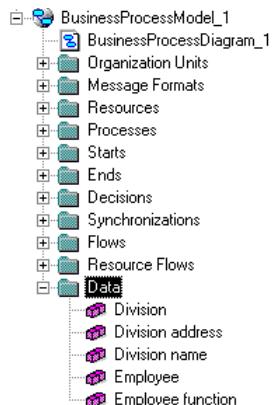
An object selection page appears. It contains a list of all the objects you can import according to the type of model.

- 3 Click the down arrowhead in the upper part of the list to select a model or package from the dropdown list.
- 4 Select objects to import.



- 5 Click the Finish button.

The result of the import is displayed in the Output window. You can view in the Browser tree view the creation of data that correspond to the objects you imported in the current model:



Defining decisions in a BPM

A **decision** specifies which alternate path has to be taken when several flow paths are possible. It must have **one** incoming flow and more than one outgoing flow, each labeled with a distinct guard condition. The global process of a decision is based on some defined editors that direct the control flow towards the valid flow by dynamically evaluating guard conditions.

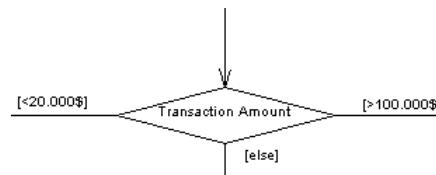
A **guard condition** is a condition that must be satisfied for an associated flow to execute some action. Across all these flows, guard conditions should not overlap to avoid ambiguity but they should cover all possibilities to avoid global process freeze.

Applicability

A decision allows you to create complex flows like:

- ◆ if ... then ... else ...
- ◆ switch ... case ...
- ◆ do ... while ...
- ◆ loop
- ◆ for ... next ...

Symbol



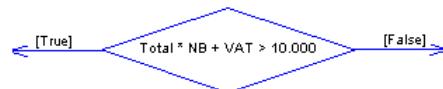
Handling symbols in the diagram

It is not possible to attach two flows of opposite directions to the same corner on a decision symbol.

Factorizing conditions

If you are working with a decision, it is useful to write a condition on the decision in order to factorize the conditions attached to the flows, it allows you to simplify the global process whenever you are using long and complex conditions.

Example



Use the Condition page in the decision property sheet to write the following condition: Total * NB + VAT > 10.000. Then use the Condition page in both flows property sheet: enter True in one and False in the other.

Decision properties in a BPM

You can double-click any decision symbol in a diagram to display its properties.

Property	Description	Maximum length
Name	Name of the decision	254
Code	Reference name of the decision	254
Comment	Descriptive comment for the decision	—
Stereotype	Extends the semantics of a decision derived from existing decisions but specific to your needs	254

Stereotype

You can select a predefined stereotype from the dropdown listbox. You can also type stereotypes directly in the Stereotype column of the object property sheet or select a value from the dropdown listbox if you have previously defined stereotypes in an embedded or imported extended model definition (.XEM).

☞ For more information on extended model definitions, see section Working with extended model definitions in chapter Managing Objects in the *General Features Guide*.

Condition in a BPM decision

A condition is a parameter that applies to a decision.

It contains the following parameters:

Parameter	Description
Alias	Summarizes the condition attached to a decision. It is recommended to write an alias (short editor) when using a long condition in order to display the alias instead of the condition in the diagram
Editor	Details the condition. For example, you can write information on the condition to execute, as well as open, insert and save any text files containing valuable information

Opening the Condition page

You can open the Condition page by right-clicking the decision symbol in the diagram, and selecting Condition from the contextual menu.

Creating a decision in a BPM

There are several ways to create a decision:

- ◆ From a diagram
- ◆ From the Browser
- ◆ From the list of decisions

At creation, a decision has a default name including a number, this number is assigned in the order of creation.

☞ For more information on the different ways to create a decision, see section Creating an object in chapter Managing Objects in the *General Features Guide*.

❖ **To create a decision from a diagram:**

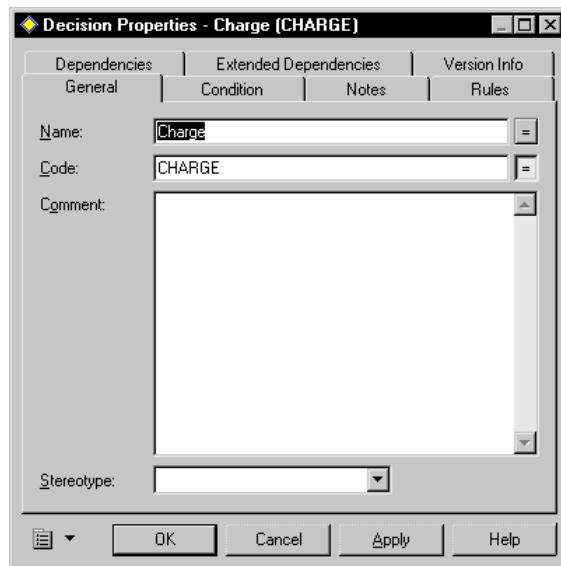
- 1 Click the Decision tool.
- 2 Click anywhere in the diagram.

The following symbol appears at the click position:



- 3 Click the Pointer tool.
or
Click the right mouse button.
You release the Decision tool.
- 4 Double-click the decision symbol to display the decision property sheet.

5 Type a name and a code.



6 Click OK.

Modifying decision properties in a BPM

You can modify the decision properties using the following methods:

- ◆ From the decision property sheet
- ◆ From the list of decisions

Modifying the decision display preference in a BPM

You can modify the following display preference of a decision using the Tools→Display Preferences command:

Preference	Description
Show stereotype	Displays the stereotype of the decision

Defining synchronizations in a BPM

A **synchronization** is used to define a synchronization point between parallel executions: several input flows, one or several output flows waiting for the end of all input executions.

Synchronization properties in a BPM

You can double-click any synchronization symbol in a diagram to display its properties.

Property	Description	Maximum length
Name	Name of the synchronization	254
Code	Reference name of the synchronization	254
Comment	Descriptive comment for the synchronization	—
Stereotype	Sub-classification derived from an existing synchronization	254

Action An action is a parameter that applies to a synchronization. The Action page defines the nature, the type and the duration of an action that a synchronization executes.

It contains the following parameters:

Parameter	Description
Editor	Details how the action is executed. Example: you can write a pseudo code or an information on the program to execute, as well as open, insert and save any text files containing valuable information
Timeout	If the value is not set to zero, it means that a timeout exception occurs if the execution of the activation takes more than the specified timeout limit. You can type any alphanumeric value in the Timeout box (Example: 20 seconds)

Creating a synchronization in a BPM

There are several ways to create a synchronization:

- ◆ From a diagram
- ◆ From the Browser
- ◆ From the list of synchronizations

At creation, a synchronization has a default name including a number, this number is assigned in the order of creation.

☞ For more information on the different ways to create a synchronization, see section Creating an object in chapter Managing Objects in the *General Features Guide*.

❖ To create a synchronization from a diagram:

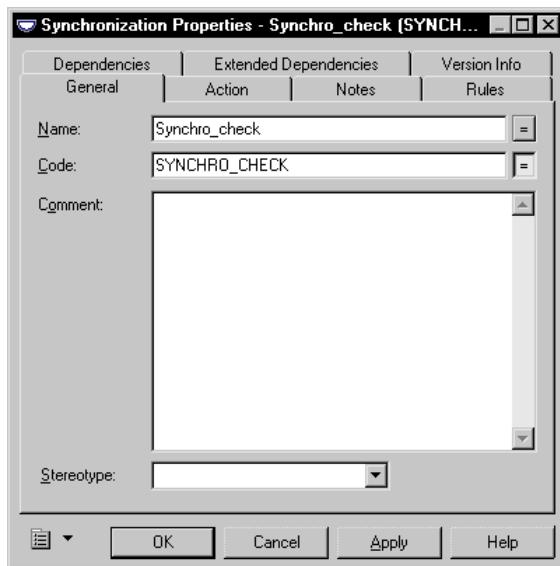
- 1 Click the Synchronization tool.
- 2 Click anywhere in the diagram.

The following symbol appears at the click position:



- 3 Click the Pointer tool.
or
Click the right mouse button.
You release the Synchronization tool.
- 4 Double-click the synchronization symbol to display the synchronization property sheet.

5 Type a name and a code.



6 Click OK.

Modifying synchronization properties in a BPM

You can modify the synchronization properties using the following methods:

- ◆ From the synchronization property sheet
- ◆ From the list of synchronizations

☞ For more information on the different ways to modify the synchronization properties, see section *Modifying object properties* in chapter *Managing Objects* in the *General Features Guide*.

Drawing the synchronization symbol in a BPM

The synchronization symbol is by default created horizontally with a downward curve. However, you can change the symbol from an horizontal to a vertical position, and conversely. You can also change the curve position from left to right or from downwards to upwards depending on the synchronization symbol position.

Drawing a vertical synchronization symbol

❖ **To draw a vertical synchronization symbol:**

- 1 Right-click the synchronization symbol you want to modify.
- 2 Select Change to Vertical from the contextual menu.

Drawing an horizontal synchronization symbol

❖ **To draw an horizontal synchronization symbol:**

- 1 Right-click the synchronization symbol you want to modify.
- 2 Select Change to Horizontal from the contextual menu.

Modifying the curve position of a synchronization symbol

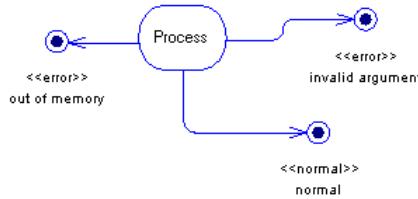
❖ **To modify the curve position of a synchronization symbol:**

- 1 Right-click the synchronization symbol you want to modify.
- 2 Select Display Inverse from the contextual menu.

Defining ends in a BPM

An **end** is a termination point of the processes described in the business process diagram. It represents an interface with the outside world.

You can create several ends within a package or a model since you may use several business process diagrams in the same model or package. You can also create several ends within the same business process diagram if you want to show divergent end cases, like errors scenarios, for example:



There can also be no end at all if you want to show an endless process. But a composite process must always contain one end at least.

Besides you cannot create shortcuts for an end.

End properties in a BPM

You can double-click any end symbol in a diagram to display its properties:

Property	Description	Maximum length
Name	Name of the end	254
Code	Reference name of the end	254
Comment	Descriptive comment for the end	—
Stereotype	Sub-classification derived from an existing end	254
Type	Type of the end	254

Type

Type property is used for document purposes. You can create your own type of end in the Type dropdown listbox, or you can choose one of the following values:

- ◆ Success
- ◆ Timeout

- ◆ Business error
- ◆ Technical error

Creating an end in a BPM

There are several ways to create an end:

- ◆ From a diagram
- ◆ From the Browser
- ◆ From the list of ends

At creation, an end has a default name including a number, this number is assigned in the order of creation.

☞ For more information on the different ways to create an end, see section *Creating an object* in chapter *Managing Objects* in the *General Features Guide*.

❖ To create an end from a diagram:

- 1 Click the End tool.
- 2 Click anywhere in the diagram.

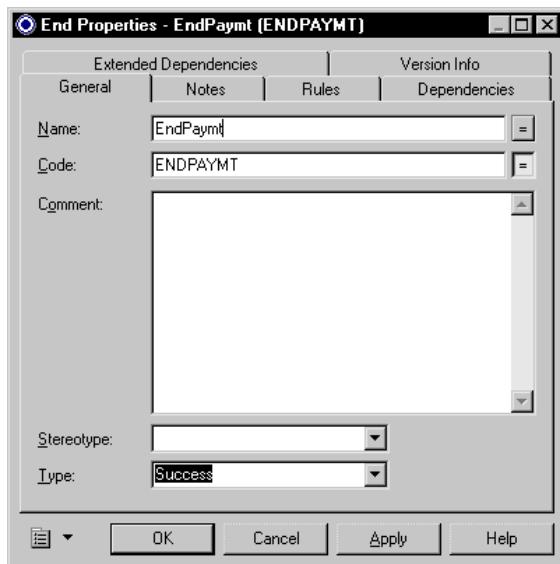
The following symbol appears at the click position:



- 3 Click the Pointer tool.
or
Click the right mouse button.
- 4 You release the End tool.

- 4 Double-click the end symbol to display the end property sheet.

5 Type a name and a code.



6 Click OK.

Modifying end properties in a BPM

You can modify the end properties using the following methods:

- ◆ From the end property sheet
- ◆ From the list of ends

☞ For more information on the different ways to modify the end properties, see section *Modifying object properties* in chapter *Managing Objects* in the *General Features Guide*.

Modifying the end display preferences in a BPM

You can modify the following display preferences for an end using the Tools→Display Preferences command:

Preference	Description
Show name	Displays the name of the end
Show stereotype	Displays the stereotype of the end

When you define display preferences for a end, you automatically define them for a start also.

☞ For more information on defining display preferences for a start, see section *Modifying the start display preferences in a BPM*.

CHAPTER 4

Using the CRUD Matrix

About this chapter This chapter describes Resource CRUD matrices and Data CRUD matrices and how to use them.

Contents

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Manipulating the CRUD matrix	109

Defining the CRUD matrix

A **CRUD matrix (Create, Read, Update, Delete)** is a table that shows the links between processes and data, or between processes and resources. When a link exists, it shows whether the process performs a Create, Read, Update, or Delete operation on the data or resource.

When the CRUD matrix shows the links between a process and a data, it is called a **Data CRUD matrix**.

When the CRUD matrix shows the links between a process and a resource, it is called a **Resource CRUD matrix**.

What are the different types of matrices ?

There are two types of CRUD matrices in the BPM:

- ◆ A process/data CRUD matrix that is available from the Data CRUD matrix command in the Tools menu. It shows the links between a process and a data, and the type of operation the process performs on the data
- ◆ A process/resource CRUD matrix that is available from the Resource CRUD matrix command in the Tools menu. It shows the links between a process and a resource using resource flows, and the type of operation the process performs on the resource

Since both matrices share mostly the same features, the term **CRUD matrix** is used in this manual when specifying is not required.

When to use a CRUD matrix ?

You can use a CRUD matrix in the BPM to observe how a process handles data or resources, and what type of action it performs on them. This can help you perform a reality check on the model.

CRUD matrix structure

A CRUD matrix is made up of headers and cells.

The **header** appears along the top and down the left side of the CRUD matrix, and contains the names or codes (depending on the model options you have defined) of the processes and resources (or data) displayed in the CRUD matrix.

☞ For more information on model options, see section Defining name/code format in chapter Managing Models in the *General Features Guide*.

Processes display in rows and resources or data display in columns.

The **cells** are the boxes inside the CRUD matrix that contain the CRUD values (Create, Read, Update, Delete). The cell is empty when there is no link between objects,

In a Data CRUD matrix, CRUD values come from the access modes defined in the Data page of the process flow property sheet.

In a Resource CRUD matrix, CRUD values come from the access modes defined in the resource flow property sheet, which determines its direction.

☞ For more information on CRUD values, see section [Modifying CRUD values](#).

☞ For more information on the access mode of a resource flow, see section [Defining resource flow](#) in chapter [Building a Business Process Model](#).

☞ For more information on the access mode of a data by a process, see section [Selecting a data for a process](#) in chapter [Building a Business Process Model](#).

Displaying a CRUD matrix

You can display a matrix from the model, or from a package.

The matrix shows the links between all processes and data (or resources) of the current package, in alphabetical order. You can nevertheless show the links between objects located in other packages by clicking the Include Sub-Packages tool in the Select Objects dialog box. You can also hide rows and columns that correspond to objects that are not linked.

☞ For more information on how to show the links between objects located in other packages, see section Adding and removing objects from the CRUD matrix.

☞ For more information on how to hide rows and columns in a CRUD matrix, see section Hiding empty rows and columns in the CRUD matrix.

What you need

To display a matrix, the current package or sub-package must contain a minimum number of objects, otherwise the Resource CRUD matrix or the Data CRUD matrix command is grayed out:

To display a matrix of type...	You need at least
Process/data	A process and a data
Process/resource	A process and a resource

To display CRUD values in the matrix, you must have previously selected data for a process or a resource flow from the Data page of their respective property sheet.

☞ For more information on how to select data for a resource flow, see section Selecting data for a flow or a message format in chapter Building a Business Process Model.

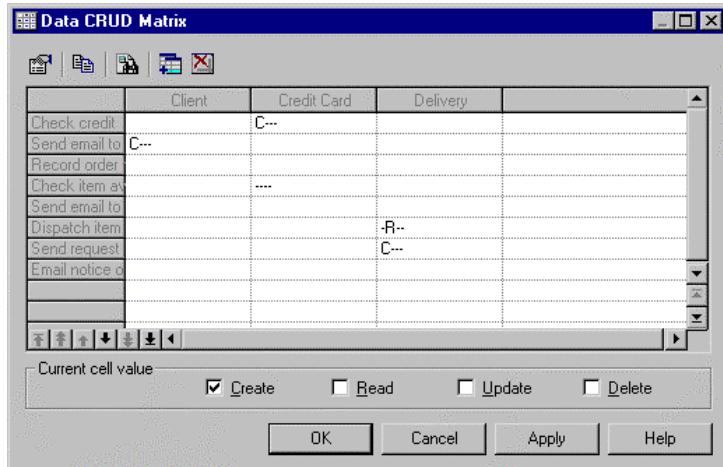
☞ For more information on how to select data for a process, see section Selecting a data for a process in chapter Building a Business Process Model.

❖ To display a CRUD matrix:

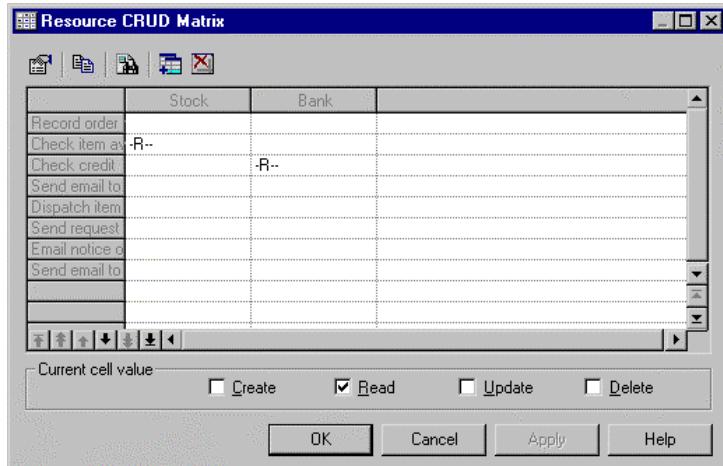
- ◆ Select Tools→Data CRUD Matrix.
or
Select Tools→Resource CRUD Matrix.

The Data CRUD Matrix or the Resource CRUD Matrix appears. By default, it displays all the data and processes or all the resources and processes of the current package and allows you to modify CRUD values. Empty cells correspond to objects that are not linked with each other. Thus, the corresponding check boxes are grayed out in the Current Cell Value groupbox in the lower part of the CRUD Matrix dialog box.

The Data CRUD Matrix looks as follows:



The Resource CRUD Matrix looks as follows:



Moving from cell to cell

You can move from a cell to another using the Arrow keys of your keyboard

Manipulating the CRUD matrix

You can perform the following actions from the CRUD matrix toolbar:

Tool	Action	Description
	Properties	Open the property sheet of the object selected in the CRUD matrix: <ul style="list-style-type: none"> ◆ Process property sheet, if you select a row header ◆ Resource or Data property sheet, if you select a column header ◆ Resource flow or data property sheet, if you select a cell
	Copy	Copy a CRUD matrix to paste it into another application like Excel
	Find Symbol in Diagram	Find in the diagram the symbol of the object selected in the CRUD matrix: <ul style="list-style-type: none"> ◆ Process symbol, if you select a row header ◆ Resource symbol, if you select a column header ◆ Resource flow symbol or process symbol that contains the CRUD values, if you select a cell
	Select Objects	Select objects located in other packages to let you change the list of rows and columns in the CRUD matrix
	Hide Empty Row/Column	Hide or Show empty rows and columns

In addition, you can modify existing CRUD values in the CRUD matrix, and change the order of rows in the matrix using the move buttons located in the lower left part of the matrix.

☞ For more information on how to modify the order of rows in the matrix, see section [Ordering rows and columns in the CRUD matrix](#).

☞ For more information on how to find an object symbol in the diagram, see section [Finding an object symbol in the diagram](#) in chapter [Managing models](#) in the *General Features Guide*.

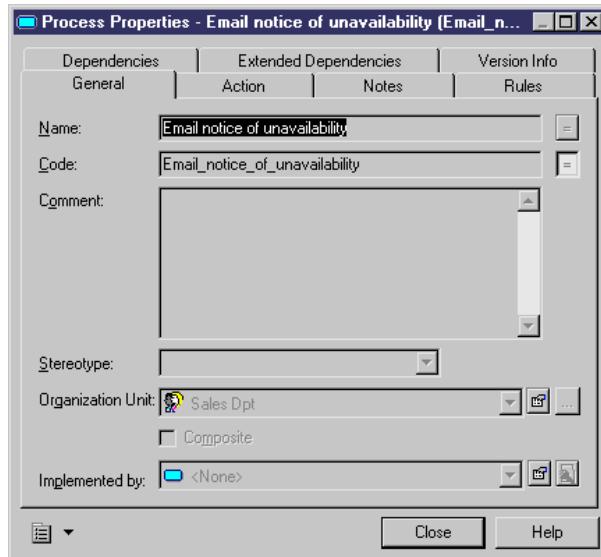
Consulting object properties from the CRUD matrix

You can consult process, resource, resource flow, and data properties from the CRUD matrix.

❖ **To consult the properties of an object from the CRUD matrix:**

- 1 Open a CRUD matrix.
- 2 Click a process, a resource, a resource flow (a cell) or a data in the matrix and click the Properties tool in the toolbar.
or
Double-click a process, a resource or a data in the matrix.

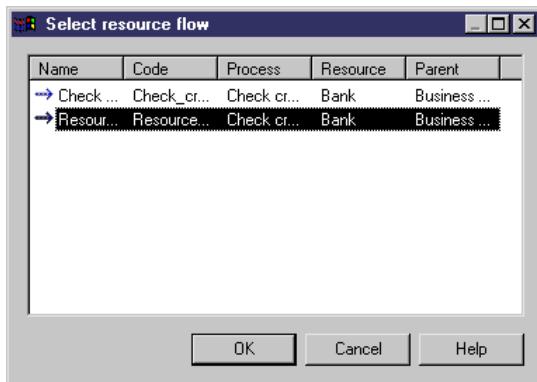
The object property sheet appears.



- 2 Navigate through the different object properties.
- 3 Click Close.

Resource flow properties

When you click a cell that has several associated resource flows, the Select Resource Flow dialog box opens to let you choose the resource flow, whose properties you want to consult:



Copying a CRUD matrix into another application

In a CRUD matrix, information displays in table format. You can copy the information in Excel in CSV (Comma Separated Value) format and in Word in text format. The textual information is separated by tabs that let you to quickly convert it into a table.

❖ To paste a CRUD matrix into another application:

- 1 Open a CRUD matrix.
- 2 Click the Copy tool in the toolbar.
The CRUD matrix is placed in the Clipboard.
- 3 Open the desired application and paste the CRUD matrix.

Finding object symbol in the diagram from the CRUD matrix

You can find in the diagram the symbol of a process, a resource and a resource flow from the CRUD matrix.

❖ To find an object symbol in the diagram from the CRUD matrix:

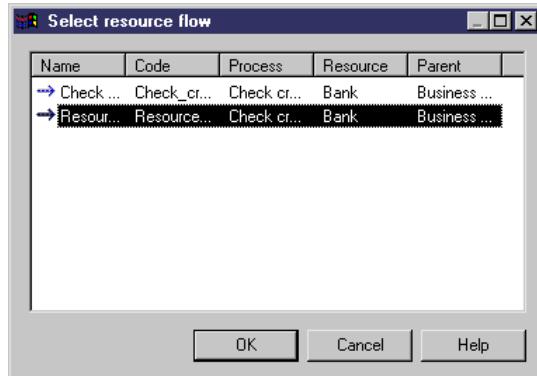
- 1 Open a CRUD matrix.

- 2 Click a process, a resource, or a resource flow (a cell) in the matrix and click the Find Symbol in Diagram tool in the toolbar.

The object symbol is selected and centered in the diagram. You have to move the CRUD Matrix dialog box to view the symbol.

Resource flow properties

When you click a cell that has several associated resource flows, the Select Resource Flow dialog box opens to let you choose the resource flow, whose symbol you want to find in the diagram.



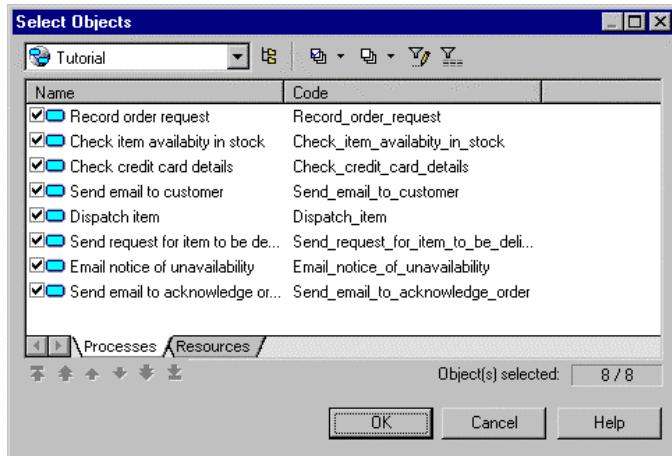
Adding and removing objects from the CRUD matrix

You can choose the objects you want to display in the CRUD matrix by adding and removing processes and resources (or data).

❖ **To add or remove objects from the CRUD matrix:**

- 1 Open a CRUD matrix.
- 2 Click the Select Objects tool in the toolbar.

The Select Objects dialog box appears. It displays the list of all the processes and resources (or data) in the current package in tabbed pages. You can click the Include Sub-packages tool to displays objects contained in other packages.



- 3 Select a package.
- 4 Click a tab in the lower part of the dialog box.
- 5 Select or deselect objects you want to add or remove from the CRUD matrix and click OK.

Add All and Deselect All tools

You can click the Add All or Deselect All tools to select or deselect all objects at once.

The CRUD matrix is automatically updated according to the selections you have made.

Hiding empty rows and columns in the CRUD matrix

Empty rows and columns in a matrix indicate the following:

Type of CRUD matrix	Contains an empty row when...	Contains an empty column when...
Process/resource	A resource is used by no process	A process does not use any resource

Type of CRUD matrix	Contains an empty row when...	Contains an empty column when...
Process/data	A data is used by no process	A process does not use any data

You can hide all empty rows and columns in the CRUD matrix at once.

Hiding of empty rows and columns only applies to the current session.

❖ **To hide all empty rows and columns in the CRUD matrix:**

- 1 Open a CRUD matrix.
- 2 Click the Hide Empty Row/Column tool in the toolbar.
All empty rows and columns are hidden.
- 3 Click Close.

Ordering rows and columns in the CRUD matrix

You can order rows and columns in two ways in the CRUD matrix:

- ◆ From the CRUD matrix itself, using the drag and drop feature for columns and the move buttons located in the lower left part of the CRUD matrix for rows
- ◆ From the Select Objects dialog box that you open using the Select Objects tool from the CRUD matrix toolbar

Ordering rows and columns from the CRUD matrix

You can change the order of rows and columns from the CRUD matrix.

Row order

You can click a row in the CRUD matrix and click one of the different move buttons in the lower left part of the CRUD matrix to change the order of rows.

Column order

You can click a column header in the CRUD matrix and drag the column to another location to change the order of columns. When you drag the column, a thin red line appears to indicate the new location.

Ordering rows and columns from the Select Objects dialog box

You can change the order of rows and columns from the Select Objects dialog box using the move buttons in the lower part of the dialog box. Thus, you can order all columns and rows at a time.

❖ To order rows and columns from the Select Objects dialog box:

- 1 Open the Select Objects dialog box from the CRUD matrix.
- 2 Click a tab in the lower part of the dialog box to display the corresponding list of objects.
- 3 Click an object then click a move button until the object reaches the position you want.
- 4 Click OK to close the Select Objects dialog box.

The object in row or column is moved to the appropriate position.

Modifying CRUD values

You can modify the CRUD values of a CRUD matrix.

The link between a process and a resource in a Resource CRUD matrix is established by a resource flow. When you modify CRUD values in a Resource CRUD matrix, you modify the CRUD values of the resource flow between the process and the resource.

The link between a process and a data in a Data CRUD matrix is defined in the Data page of the process property sheet. When you modify CRUD values in a Data CRUD matrix, you modify the CRUD values of the data assigned to the process in the process property sheet.

CRUD values are displayed in the cells of the matrix, but are only modifiable from the Current Cell Value groupbox located in the lower part of the CRUD Matrix dialog box.

You cannot multi-select cells to modify their CRUD values.

The following CRUD values are available in a CRUD matrix:

- ❖ Create
- ❖ Read
- ❖ Update
- ❖ Delete

❖ **To modify CRUD values:**

- 1 Open a CRUD matrix.
- 2 Click the cell that corresponds to the resource flow or the process that contains the data access mode whose CRUD values you want to modify.

The corresponding CRUD values in the Current Cell Value groupbox appear.

- 3 Select or deselect check boxes according to your needs.
- 4 The CRUD values automatically reflect the changes in the corresponding cell in the matrix.

The changes automatically appear graphically in the diagram for the resource flow when required. The Access Mode groupbox of the resource flow property sheet changes accordingly or the CRUD values in the Data page of the process property sheet change accordingly.

CHAPTER 5

Working with Business Process Models

About this chapter

This chapter describes how to check the validity of a Business Process Model (BPM), and how to merge and compare Business Process Models.

The Check Model feature verifies the validity of BPM objects within a model at any time.

The Merge Model feature allows you to unify models, it combines two different models into a single one.

It also describes how to open a ProcessAnalyst Model (PAM) into a BPM.

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Checking a BPM

The Business Process Model is a very flexible tool. It should allow you to build your model without any controls or constraints on data exchange and coherence of the system.

However, you can use the Check Model feature at any time to control the coherence and correctness of the model you are building.

You can:

- ◆ Define check options, such as level of problems severity and automatic correction
- ◆ Select objects to be verified
- ◆ Check a global BPM
- ◆ Reuse check options previously defined
- ◆ Make corrections based on BPM check results

BPM check options

When you check a BPM, if a parameter is found to be invalid, it will be displayed as an error or a warning in the Check Model window.

You can define levels of severity for problems that Check Model finds and you can have certain problems automatically corrected.

Levels of problem severity

You can identify the level of problem severity with the following tool:

Tool	Indicates	Description
	Error	Major problem that produces an invalid BPM
	Warning	Minor problem or recommendation

To display the severity level options, select Tools→Check Model, then expand the nodes of the tree view in the options tab.

These messages represent two different levels of problem severity. You can modify the level of problem severity for each object parameter verified by the Check model. This severity level can depend on the degree of normalization you want to achieve in your model.

Automatic correction

You can specify if you want PowerDesigner to automatically correct an error using the Automatic Correction feature.

Tool	Indicates	Description
	Automatic correction	PowerDesigner will correct the problem automatically

However, before using automatic correction, make sure you understand how it will affect your model.

Automatic correction is not available for all object parameters. Problems that cannot be corrected automatically must be corrected manually.

For more information on objects available for automatic correction, see section BPM object parameters verified by Check Model.

BPM object selection in the Check Model

You select objects to be checked from the Selection page of the Check Model Parameters dialog box (Tools→Check Model).

You can list all objects, including composite objects created in the current model, current package, or sub-packages by selecting the Include Sub-Objects tool.

You have the following selection options:

Parent object	Include Sub-Objects selected	Include Sub-Objects not selected
Model	All objects (composite or not) created in model including those in packages and sub-packages	All objects (composite or not) created in model except those in packages and sub-packages
Package	All objects (composite or not) created in package including those in sub-packages	All objects (composite or not) created in package except those in sub-packages

Selecting objects in the diagram

If you graphically select objects in your diagram before starting the Check Model, they can be automatically selected for verification by the Check Model by clicking the Use Graphical Selection tool in the Selection page toolbar.

Checking a global BPM

You can check the validity of a BPM at any time.

❖ To check a global BPM:

- 1 Select Tools→Check Model.

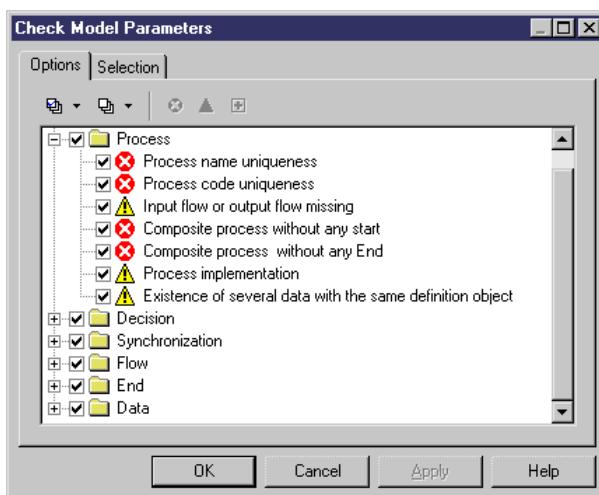
or

Right-click the diagram background and select Check Model from the contextual menu.

The Check Model Parameters dialog box opens to the Options page.

- 2 Expand an object parameter node.

The object parameters verified by the Check Model are displayed with the symbols indicating a degree of problem severity.



- 3 If you want to change a degree of problem severity, select the object parameter and then select either the Error or Warning tool.

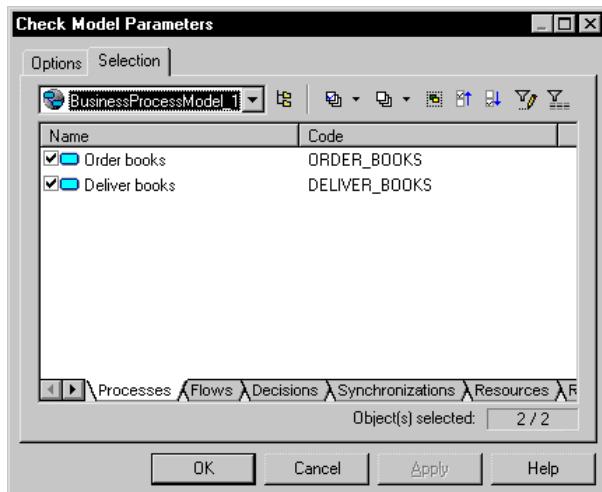
The symbol changes to the appropriate severity level.

4 If you want PowerDesigner to automatically correct a problem, select the object parameter and then select the Automatic Correction tool.

The Automatic Correction symbol appears superimposed on the Error or Warning symbol for that object parameter.

5 Click the Selection tab to display the Selection page.
 6 Select a model from the dropdown listbox at the top of the dialog box.
 7 Click an object tab at the bottom of the Selection page.

The corresponding object page displays all the objects in the current BPM.



8 Select check boxes only for objects you want to be checked.
 9 Clear check boxes for objects that you do not want to be checked.

Selecting all or clearing all check boxes

You can select all object check boxes by clicking the Select All tool.
 You can clear all object check boxes by clicking the Deselect All tool.

10 Click OK.

The Check Model Result List displays errors and warnings based on the check options you have defined.

Category	Check	Object	Location
⚠ Flow	Flow undefined message fo...	Flow	Tutorial
⚠ Flow	Flow undefined message fo...	Flow	Tutorial
⚠ Flow	Flow undefined message fo...	Flow	Tutorial
⚠ Flow	Flow undefined message fo...	Flow	Tutorial
⚠ Flow	Flow undefined message fo...	Flow	Tutorial
✗ End	Existence of input flow	End_4	Tutorial

Dockable result window

When you right-click an object parameter in the Result List, a contextual menu appears listing correction options. Among these, you can also select options to clear, dock or hide the result window.

Displaying previously applied check options in a BPM

If you click the Apply button in the Check Model Parameters dialog box, all error and warning selections are stored in memory.

❖ To display errors and warnings selected in the last check:

- ◆ Select Tools→Check Model.

The Check Model Parameters dialog box opens to the Options page. The object parameters are displayed with the Error or Warning icons selected in the last check.

Making corrections based on BPM check results

You use the Check Model feature to locate and correct problems in the BPM.

Using the Check toolbar generally located in the upper part of the PowerDesigner main window, you have access to the following correction options when you select an error in the Result List:

Symbol	Option	Description
	Correct error	Displays property sheet of the problem object

Symbol	Option	Description
	Display details	Displays description of the error and suggestion for correction
	Check again model	Checks selected object parameter, normally after a correction has been done
	Automatic correction	PowerDesigner automatically corrects non-unique names and codes

Display the Check toolbar

If the Check toolbar is not displayed, select Tools→Customize Toolbars and select the Check check box.

Navigating in the error list

The Check toolbar contains navigation tools to move to the first, previous, next, or last error listed. You can also navigate in the Result list by right-clicking an object parameter and selecting Go To First error, Previous error, Next error, or Last error from the contextual menu.

Contextual menu

When you right click an object parameter, a menu appears listing the correction options Manual Correction, Help, Check again, and Automatic Correction. You can also select options to clear, dock and hide the result window.

Making manual corrections to a BPM

Some errors cannot be corrected automatically, they have to be corrected manually.

❖ To make manual corrections to a BPM:

- 1 Select an object parameter from the Result List.
- 2 Right-click the object parameter and select Correct from the contextual menu to display the object property sheet.
- 3 Select the appropriate tab and make the necessary correction.
- 4 Close the property sheet.

- 5 Right-click the object parameter and select Check again from the contextual menu.

Verify that the problem has been corrected by running Check Model again.

Making automatic corrections to a BPM

PowerDesigner can perform automatic corrections on non-unique names and codes.

❖ **To make automatic corrections to a BPM:**

- 1 Select an object parameter from the Result List.
- 2 Right-click the object parameter and select Automatic Correction from the contextual menu.
- 3 Right-click the object parameter and select Re-check from the contextual menu.

Verify that the problem has been corrected by running Check Model again.

BPM object parameters verified by Check Model

The Check Model verifies the validity of the BPM objects.

When errors are encountered during a check model, corrections can be made manually or automatically. Manual corrections depend on how you are using your model.

Use the Help command to select object control options

When you right click a BPM object control in the Check Model Parameters page, a menu appears listing several options. The Help command opens a contextual help page explaining the checks performed for the selected object type.

Replication check

During a replication check, the following object controls are made.

Partial replication

A replica object is partially synchronized with its replicated object.

Manual correction	Automatic correction
Modify the list of replicated attributes from the replication property sheet	Enforces the replication of desynchronized attributes of the replica object in the replication property sheet

Business Rule check in a BPM

During a business rule check, the following object controls are made.

Business rule name and code uniqueness

A model cannot contain two business rules with identical name and/or code.

Manual correction	Automatic correction
Modify the duplicated business rule name/code	Modifies the business rule name/code of a selected object by appending a number to its current name

Unused business rule

The business rule you have created is not used in the model.

Manual correction	Automatic correction
Apply the business rule to an object in the model	—

Package check

During a package check, the following object controls are made.

Existence of several data with same definition object

Several data should not be linked to the same definition object within the same namespace.

Manual correction	Automatic correction
Link the data to different definition object from the data property sheet	—

Process check

During a process check, the following object controls are made.

Process name and code uniqueness

Process names and codes must be unique in the namespace.

Manual correction	Automatic correction
Modify the duplicate process name/code	Modifies the process name or code of a selected object by appending a number to its current name or code

Input or output flow missing

Each process must have at least one input flow and at least one output flow.

Manual correction	Automatic correction
Add any missing flows to the process	—

Composite process without start or end

A composite process must contain at least one start and at least one end.

Manual correction	Automatic correction
Add a start and an end in the sub-process diagram	—

Process implementation

A process cannot be implemented by an implemented process.

Manual correction	Automatic correction
Select a process which is not an implemented process	—

Existence of several data with the same definition object

Several data should not be linked to the same definition object within the same namespace, as data can be created in a composite process.

Manual correction	Automatic correction
Link the data to different definition object from the data property sheet	—

Process with incoherent data accesses

The data attached to a flow should also be attached to the source and destination processes.

Manual correction	Automatic correction
Migrate the data of the flow to the source and destination processes	Automatically migrate the data of a flow to the source and destination processes

Undefined data accesses

The data accesses of a process should have one of the following values: Create, Read, Update, Delete.

Manual correction	Automatic correction
Add a data access for the data in the Data page of the process property sheet	—

Decision check

During a decision check, the following object controls are made.

Decision name and code uniqueness

Decision names and codes must be unique in the namespace.

Manual correction	Automatic correction
Modify the duplicate decision name/code	Modifies the decision name or code by appending a number to its current name or code

Invalid decision

A decision must have only one input flow and more than one output flow.

Manual correction	Automatic correction
Add any missing flows to the decision	—

Synchronization check

During a synchronization check, the following object controls are made.

Synchronization name and code uniqueness

Synchronization names and codes must be unique in the namespace.

Manual correction	Automatic correction
Modify the duplicate synchronization name/code	Modifies the synchronization name or code by appending a number to its current name or code

Incomplete synchronization

A synchronization must have at least two input flows and one output flow.

Manual correction	Automatic correction
Add any missing flows to the synchronization	—

Flow check

During a flow check, the following object controls are made.

Flow without source or destination

A flow must have a source and a destination object.

Manual correction	Automatic correction
Assign a source or a destination to the flow	—

Flow undefined message format

A flow should have a defined message format or the message format set to <None>.

Manual correction	Automatic correction
Define the message format for the flow or delete it	—

Flow incoherent message format

The message format of a flow coming out of a composite process (child process) must also exist on the flow going to the end inside the child process. The message format of a flow coming in a composite process must also exist on the flow going out from the start inside the child process.

Manual correction	Automatic correction
Add any missing message formats to the appropriate flows of the decomposed processes	—

File check

During a file check, the following object controls are made.

Embedded file name uniqueness

Embedded file object names must be unique in the model.

Manual correction	Automatic correction
Modify the duplicate file object name	Modifies the file object name by appending a number to its current name

Existence of external file location

External file objects should have a valid path location.

Manual correction	Automatic correction
Define a valid path location	—

Resource check

During a resource check, the following object controls are made.

Resource name and code uniqueness

Resource names and codes must be unique in the model.

Manual correction	Automatic correction
Modify the duplicate resource name/code	Modifies the resource name or code by appending a number to its current name or code

Isolated resource

A resource must be linked to at least one process.

Manual correction	Automatic correction
Link the resource to a process	—

Resource flow check

During a resource flow check, the following object controls are made.

Resource flow name and code uniqueness

Resource flow names and codes must be unique in the namespace.

Manual correction	Automatic correction
Modify the duplicate resource flow name/code	Modifies the resource flow name or code by appending a number to its current name or code

Resource flow extremities

A resource flow must always link a process to a resource or a resource to a process.

Manual correction	Automatic correction
Assign a process and a resource to the resource flow extremities	—

Resource flow undefined access mode

A resource flow must have a defined access mode (Read, Create, Update or Delete).

Manual correction	Automatic correction
Assign an access mode to the resource flow	—

Organization unit check

During an organization unit check, the following object controls are made.

Organization unit name and code uniqueness

Organization unit names and codes must be unique in the model.

Manual correction	Automatic correction
Modify the duplicate organization unit name/code	Modifies the organization unit name or code by appending a number to its current name or code

Circular dependency through parent property

An organization unit cannot be the parent of itself or cannot have for parent one of its children.

Manual correction	Automatic correction
Change the organization unit in the Parent box in the organization unit property sheet	—

Start check

During a start check, the following object controls are made.

Start name and code uniqueness

Start names and codes must be unique in the namespace.

Manual correction	Automatic correction
Modify the duplicate start name/code	Modifies the start name or code by appending a number to its current name or code

Existence of output flow

Each start object must have at least one output flow.

Manual correction	Automatic correction
Create a flow from the start	—

End check

During an end check, the following object controls are made.

End name and code uniqueness

End names and codes must be unique in the namespace.

Manual correction	Automatic correction
Modify the duplicate end name/code	Modifies the end name or code by appending a number to its current name or code

Existence of input flow

Each end object must have at least one input flow.

Manual correction	Automatic correction
Create a flow to the end	—

Message format check

During a message format check, the following object controls are made.

Message format name and code uniqueness

Message format names and codes must be unique in the model.

Manual correction	Automatic correction
Modify the duplicate message format name/code	Modifies the message format name or code by appending a number to its current name or code

Message format definition uniqueness

Message format definitions must be unique in the model.

Manual correction	Automatic correction
Delete the duplicate message format definition	—

Data

During a data check, the following object controls are made.

Data name and code uniqueness

Data names and codes must be unique in the namespace.

Manual correction	Automatic correction
Modify the duplicate data name/code	Modifies the data name or code of a selected object by appending a number to its current name or code

Unused data

The data you created is not used in the model.

Manual correction	Automatic correction
Attach the data to an object in the model	—

Comparing and merging BPM models

You can compare and merge two Business Process Models.

The comparison process allows you to highlight the differences between two BPM.

The merge process allows you to form a single model that combines design efforts performed independently by several team members.

Merge is performed from left to right, the model in the right pane is compared to the model in the left pane, differences are highlighted and merge actions are proposed in the model to be merged.

☞ For more information on comparing and merging models, see chapter Comparing and Merging Models in the *General Features Guide*.

Opening ProcessAnalyst models

The PowerDesigner V6 ProcessAnalyst Model allows you to design data flow diagrams.

You can recover V6 ProcessAnalyst Model information into a Business Process Model by opening a PAM into a BPM.

You will then retrieve PAM objects into your BPM as a new BPM is created for the PAM model, and the objects of the PAM model are translated into BPM objects.

You can still open a PAM into a CDM (Conceptual Data Model), knowing that the PAM objects recovery is restricted to data items and domains. When opening a PAM, you are asked to choose between opening into a BPM, or opening into a CDM.

Converting PAM objects into BPM objects

The open process converts PAM objects into BPM objects as follows:

Objects in a PAM	Imported object in a BPM
Process	Process
Split/Merge	Process or synchronization
External entity	Start & End
Off page connector	Start & End
Data flow	Flow or Resource flow
Data store	Resource
Data item on Data flow	Data (elementary)
Domain	—
Business rule	Business rule

Split/Merge

A split is imported as a synchronization and the following message appears in the Action page of the synchronization property sheet after the import: "This process splits data".

A merge is imported as a process and the following message appears in the Action page of the process property sheet after the import: "This process merges data".

External entity

An external entity with outgoing data flows is imported as a start.

	An external entity with incoming data flows is imported as an end.
	An external entity with both outgoing and incoming data flows is imported as a start and an end. Outgoing data flows are associated to the start and incoming data flows to the end.
Off page connector	An Off page connector with outgoing data flows is imported as a start. An Off page connector with incoming data flows is imported as an end.
Data flow	A data flow between a data store and a process is imported as a resource flow. Any other data flow is imported as a flow. A data flow with a double direction is imported as two distinct flows, except for the resource flow. The data flow type is imported as a flow type property for process flows and is lost for resource flows.
Data store	The Number property is not imported and the Is Entity property is imported as an <Entity> stereotype on the resource. The list of data items is imported as a unique concatenated string in the Comment box of the resource property sheet.
Data item on data flow	Data items are imported as elementary data. Attachment of a data item to a flow must be preserved by attaching the corresponding data to the imported flow. Check parameters are not imported.
Domain	Domains are not imported.
Business rule	Business rules are imported. Attachment of a business rule to a domain or a data item is not imported.

Opening a PAM into a BPM

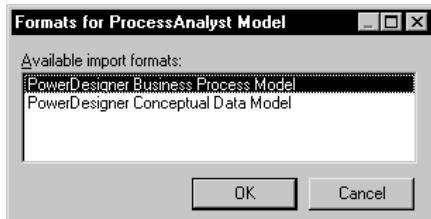
❖ **To open a PAM into a BPM:**

- 1 Select File→Open to display the open file dialog box.
- 2 Select or browse to the directory that contains the .PAM file.
- 3 Select ProcessAnalyst Model (*.pam) file from the Files of Type dropdown listbox to display only PAM files.

The available PAM files are listed.

- 4 Select a file.
- 5 Click Open.

The Formats for ProcessAnalyst Model window appears.



- 6 Select PowerDesigner Business Process Model and click OK.

The Output window displays a message following the successful import and the default diagram of the model appears.

Each imported object type can be viewed from its respective list.

CHAPTER 6

Generating from a Business Process Model

About this chapter This chapter describes how to generate a BPM from a Business Process Model.

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Generation basics

When you generate from an Business Process Model you can generate a BPM. You can generate a model from a global BPM or from a package within the model. Limiting model generation to a single package is useful when different designers own packages of the same BPM. Designers can generate their packages independently from others. Generating a package results in an independent model.

You can generate from a BPM in two ways:

Generate	Description
New model	Creates a new model containing the objects translated from the BPM
Updated model	Creates a default model with the objects translated from the BPM that is merged with an existing model. You can update, delete, or add objects in the existing model (model to be merged in the right pane) based on modifications made in the default model (in the left pane)

☞ For more information on merging two models, see chapter Comparing and Merging Models in the *General Features Guide*.

Target models parameters

An external shortcut depends on a target object in a different model. External shortcuts allow you to share objects between different models.

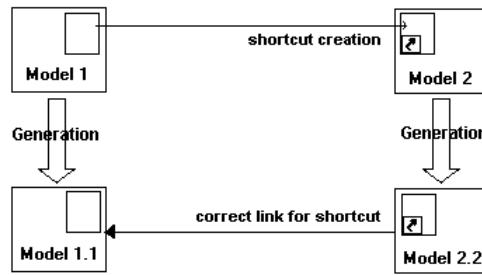
When you generate models into other models, you can preserve the link between an external shortcut and its target model through generation.

You can use the Target Models tab to select generated models to retrieve the corresponding target objects of external shortcuts. External shortcuts can then be correctly linked to target objects in the correct target model.

The Target Models page displays the following columns:

Column	Description
Target Models	Original target model of the shortcut (not editable)
Generated Models	Lets you select the model that will be used as the target for the generated shortcut

The model generation process allows you to define the target object of a shortcut in a generated model.



For example, here is the proper sequence of events for external shortcuts generation:

- ◆ Model 1 is the target model of a shortcut in Model 2
- ◆ Model 1 is generated to Model 1.1
- ◆ Model 2 is prepared for generation to Model 2.2 by associating appropriate parameters in the Target Models page:

If Model 1 is still opened in the workspace The Target Model column displays the original target model (Model 1), and its path. The Generated Models column displays the last generated model the first time you generate Model 1; the next time you generate Model 1, the Generated Models column displays the last model selected. You can click the arrow in the Generated Models column to modify the model selection in order to allow the creation of a correctly linked shortcut.

If Model 1 is closed in the workspace The Target Model column displays the original target model (Model 1), and its path. The Generated Models column displays <none>. When you click into the Generated Models column, the original target model Model 1 is automatically opened in the workspace in order to find the models generated from Model 1. You can use the arrow to select Model 1.1, the new target that will allow the creation of a correctly linked shortcut in Model 2.2.

- ◆ The external shortcut in Model 2.2 is correctly generated with a link to its target object in Model 1.1.

☞ For more information on shortcuts, see chapter *Managing Shortcuts* in the *General Features Guide*.

You can also preserve the link between an external replication and its target model through generation.

For more information on the generation of object replications , see section Generating replications in chapter Managing Object Replications in the *General Features Guide*.

Object selection parameters

You select objects for model generation from the Selection page.

Listing objects contained in a model or package

You can display in the list, objects in the current model, or objects in individual packages contained in the model. If you select the Include Sub-Objects tool, you can display either all objects in the current model, or all objects in a package.

You have the following selection options:

Parent object	Include Sub-Objects selected	Include Sub-Objects not selected
Model	All objects in the model including all objects in packages and sub-objects	All objects in the model except objects in packages and sub-sub-objects
Package	All objects in the package including all sub-objects	All objects in the package except sub-objects

Objects selected in the model

Objects selected in the model can be automatically selected for generation by clicking the Use Graphical Selection tool in the Selection page toolbar.

Generating a Business Process Model from a Business Process Model

This section explains how to generate a Business Process Model from a Business Process Model.

Generating and updating a BPM

To generate a BPM, you must choose between one of the following methods:

- ◆ Generate new Business Process Model
- ◆ Update existing Business Process Model

Generate new Business Process Model

You must indicate the following parameters when you generate a new BPM:

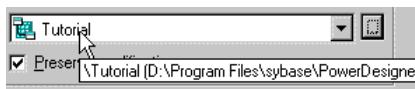
Parameter	Description
Name	File name for the resulting BPM
Code	Reference code for the resulting BPM
Configure Model Options	Lets you define the model options for the new BPM

☞ For more information on model options when generating a BPM from a BPM, see section *Defining BPM options* in chapter *Business Process Model Basics*.

Update existing Business Process Model

You can generate a BPM into an existing BPM.

If you choose to update an existing BPM when the current BPM has never been generated, the Select Model dropdown listbox is empty by default. You have to click the Ellipsis button to display a Select Model dialog box in which you can select a model. The Workspace Location and Physical Path columns provide more information about the model location in the workspace and the file path to help you choose the BPM. You can also use the tooltip in the dropdown listbox to verify the location and path of the model.



To update an existing BPM, you must indicate the following parameters:

Parameter	Description
Select Model	Existing BPM. The BPM is generated into a BPM. This BPM is merged with the existing BPM to create an updated BPM. The dropdown listbox displays already generated models. The Ellipsis button lets you select models opened in the workspace
Preserve Modifications	Allows a comparison and merge of the newly generated BPM (default BPM) with the currently selected BPM

Clearing the Preserve Modifications check box

If the Preserve Modifications check box is not selected, PowerDesigner automatically replaces the existing BPM with the newly generated BPM. If you want to choose which objects to add or delete from the existing BPM, you must select the Preserve Modifications check box to compare and merge the two BPM.

Defining BPM generation options

You can set the following general generation options from the Detail page:

Option	Description
Check Model	When selected, verifies the model before generating the BPM, and stops generation if an error is found
Save Generation Dependencies	When selected, PowerDesigner keeps track of the identity of each generated object. It is useful when merging two BPM which have been generated from the same BPM. Objects can be compared and recognized as the same object, even if the object has been modified in the merged BPM

Check model before generation

If you select the Check Model option, the procedure to generate a BPM starts by checking the validity of the BPM. A BPM results when no errors are found. You can set check options by selecting Tools→Check Model.

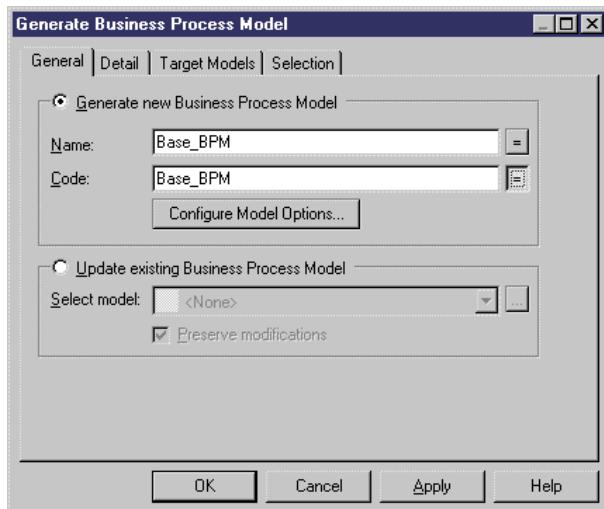
Generating a new BPM from a BPM

You can generate a BPM from a BPM or from a package in a BPM. PowerDesigner creates a new BPM containing all the objects that you selected to generate in the BPM. The newly created BPM appears in the browser and the corresponding diagram opens in the work area.

You can only generate a BPM from the active BPM diagram.

❖ To generate a new BPM from a BPM:

- 1 Select Tools→Generate Business Process Model to display the Generate Business Process Model dialog box.
- 2 Select the Generate New Business Process Model radio button.
- 3 Type a new name and code, otherwise the BPM will have the same name and code as the source BPM.



- 4 <optional> Click the Configure Model Options button to define the options of the generated PDM.
- 5 Click the Detail tab to define options and generation parameters.
- 6 Click the Target Models tab to select the target models of shortcuts in the current model.
- 7 Click the Selection tab to display the Selection page.
- 8 Select the name of a BPM from the Select Location dropdown listbox.

Generating a BPM from a package

To generate a BPM from a package, select the package name from the dropdown listbox in the upper left corner of the dialog box. To generate a BPM from a sub-package, select a sub-package from the dropdown listbox in the upper left corner of the dialog box, or select a package name and click the Include Sub-Packages tool next to this dropdown listbox.

9 Select the check boxes for the objects you want to generate, and clear the check boxes for the objects you do not want to generate.

10 Click OK.

The Output window shows the progress of the generation process. The diagram of the new BPM appears in the work area.

Updating an existing BPM

There are two ways to update an existing BPM depending on whether the Preserve Modifications option is selected or not:

Preserve Modifications	Result
Selected	You can manually compare and merge an existing BPM (right pane) with the newly generated BPM (left pane)
Not selected	The existing BPM is automatically replaced by the newly generated BPM

You can only generate a BPM from the active BPM diagram window.

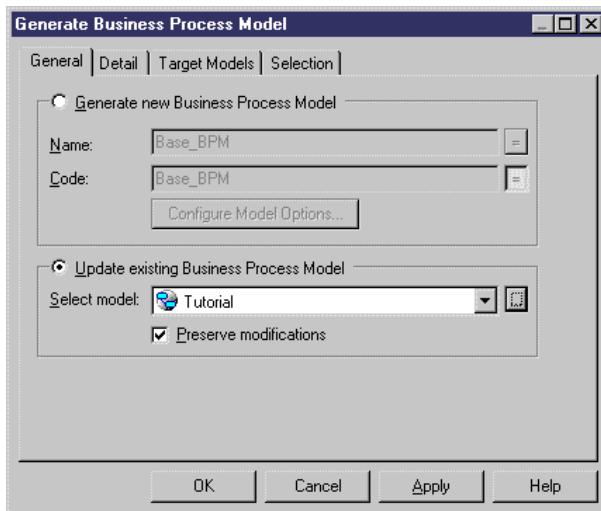
❖ **To update an existing BPM by generating from a BPM:**

- 1 Select Tools→Generate Business Process Model to display the Generate Business Process Model dialog box.
- 2 Select the Update Existing Business Process Model radio button.

3 Select a model from the Select Model dropdown listbox if the current model has already been generated.

or

Click the Ellipsis button beside the Select Model dropdown listbox and select an existing model in the Select a Model dialog box.



Preserve modifications

If you want to preserve objects in the BPM, then the Preserve Modification check box must be selected. If you clear this check box, all existing objects in the BPM will be removed from the model, leaving only the objects generated from the BPM.

- 4 Click the Detail tab to define options and generation parameters.
- 5 Click the Target Models tab to select the target models of shortcuts in the current model.
- 6 Click the Selection tab to display the Selection page.
- 7 Select the name of a BPM from the Select Location dropdown listbox. The default BPM is generated from this BPM.

Generating a BPM from a package

To generate a BPM from a package, select the package name from the dropdown listbox in the upper left corner of the dialog box. To generate a BPM from a sub-package, select a sub-package from the dropdown listbox in the upper left corner of the dialog box, or select a package name and click the Include Sub-Packages tool next to this dropdown listbox.

- 8 Select the check boxes for the objects you want to generate, and clear the check boxes for the objects you do not want to generate.

- 9 Click OK.

If you selected the Preserve Modifications check box, the Merge Models window appears.

If you cleared the Preserve Modifications check box, the updated BPM diagram appears in the work area.

Merging models

The Merge Models dialog box shows the newly generated BPM in the left pane, and the existing BPM in the right pane. You can select or clear object check boxes in the right pane for BPM objects that you want to include or delete in the model to be merged.

☞ For more information on merging models, see chapter Comparing and Merging Models in the *General Features Guide*.

BPM Glossary

action	Defines the nature, the type and the duration of an action that a process executes
BPM (Business Process Model)	Conceptual model which provides a close description of the business logic and rules from a business partner's point of view using a diagram that shows interactions between processes, flows, messages and collaboration protocols from one or several start points to several potential end points
business process	Activity that a business can engage in and for which it would generally want one or more partners
business rule	Written statement specifying what the information system must do or how it must be structured to support business needs. It guides and documents the creation of a model (example: a government-imposed law)
composite process	Child process used to describe the actions of the parent process
condition	A condition that must be satisfied for an associated flow to execute some action
CRUD matrix	Table that shows the links between processes and resources. When a link exists, it shows whether the process performs a Create, Read, Update, or Delete operation on the resource
data	Defines the type of information exchanged between business processes
decision	Specifies which alternate path has to be taken when several flow paths are possible
dependency	Semantic relationship between two modeling elements, in which a change to one modeling element (the influent element) may affect the semantics of the other modeling element (the dependent element)
diagram	Graphical view of a model or package which displays object symbols
ebXML	Set of specifications for standardizing XML globally in order to facilitate business over the Internet between companies of any size.
end	Represents a termination point of the processes described in the business process diagram

flow	Interaction between two objects with potential exchange of data
implemented by	Property of a process that uses another process to share its implementation details
message	Set of data sent and received with a beginning and an end
message format	Data format that depends on the nature of the exchanged data and on which two objects agree to communicate
note	Symbol for displaying a comment or textual information (ex: a method body or constraint)
organization unit	Element that allows you to define which organization is responsible for which process. It can represent a company, a system, a service, an organization, a user or a role. It is equivalent to the swimlane in UML
package	General purpose mechanism for organizing elements into groups. It contains model objects
protocol	Set of rules that govern the transmission and reception of data
process	Invocation of a manual or automated action
resource	Similar to a data store, it can be a data, a document, a database, a component, or an executable
resource flow	Allows a process to access a resource. Information within the resource can be created, updated, deleted or read by the process
shortcut	Object representing and referencing an object in the same model, or across different models
stereotype	Extension of the vocabulary of the UML, it allows you to create new kinds of building blocks that are derived from existing ones but that are specific to your problem
start	Starting point of the whole process represented in the business process diagram
swimlane	UML representation of the organization unit
synchronization	Synchronization point between parallel executions (several input flows, one or several output flows waiting for the end of all input executions)

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